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See who won—page 116

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ON THE COVER: Project Speed Stick plants its massive rear slicks for another stoplight-to-stoplight run (never mind the fact that Civics are front-wheel-drive). Lensmaster Walter Sidas composed the highly cinematic night shot.



More than a hobby

Does this kind of action say "hobby" to you?

For years, we've been talking about the radio-control car hobby, but I think it's time to retire the whole "hobby" concept. Certainly, if you want to get all "Webster's" about it, RC meets the definition of a hobby, but so does just about anything you might do for fun when you're not at school or work. I believe RC meshes with the "action sport" genre far more closely than any traditional hobby activity. As RC guys, do we really have anything in common with stamp collectors, macramé fans, or Shrinky Dink buffs? Hardly. We're much closer to import tuners, motocross guys and gearheads of all types. When I hear the word "hobby," I think of a pipe-smoking, sweater-vested grandfatherly type toiling over a ship in a bottle with tweezers and a magnifying glass. That's not me, and I don't think it's you.

So RC is not a hobby. Does this semantic shift really mean anything? Not on the face of it; I don't think it will matter if we refer to RC as a "hobby" or as an "action sport," but I do think it's important not to have a hobby *mindset*. If you're the type who gets upset because ready-to-run kits are "ruining the hobby," you aren't thinking big enough. If you think RC is somehow reserved for a special few and isn't for everyone, then you have a hobby mindset.

We are poised on the edge of an exciting new era for RC, whether you like to drive, fly, or float. RC technology is more reliable and affordable than ever before, and experiencing the action is easier than ever. The barriers are down. You don't need to be mechanically inclined; you don't have to devote hours upon hours to a project; and you don't need to spend a ton of money. Now is the time for RC to explode and reach everyone who has ever seen a "real" RC car, boat, or plane and thought, "That's cool, but RC is too difficult a hobby for me." RC isn't too difficult for anyone, so let's get everyone on board. Send 'em to RCX!

Peter Vieira
Executive Editor

It's gonna be HUGE

ARE YOU READY FOR THE "ULTIMATE RC EXPERIENCE"?

In 2003, *Car Action* will bring you the Radio Control Expo (or RCX, as we call it). RCX will take over the Anaheim Convention Center for three days of total RC immersion. Naturally, the place will be packed to the rafters with all things radio-controlled, but RCX isn't just a troll-the-aisles, look-at-the-booths type of show. This is an *event* in every sense of the word. There will be music, celebrity races, contests and prizes—plus all sorts of cars, planes and boats you can try for yourself, thanks to RCX's demo tracks, pools and flight zones. RCX will even tap into radio-control technology you've never seen or experienced before. You have to be there! Stay tuned for more info.



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Well, this thing known as drifting has caught on with RC cars. I've been around a few RC web boards, and there are at least three threads on drifting. The one I visit most often is on HPI's board. The current thread is in its fourth version and still growing. It would be nice if you dropped by the HPI board and recognized shockwave, robstoy's racing and spoolin for their efforts to promote this new way of driving RC cars. They have also turned their TLois and

[illegible]

Eric Williams
Acer Racing

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RC9046 Mini-Z Hauler Bag



www.teamtrinity.com

READERS WRITE

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TRINITY

HPI RS4s into drift machines, and there is even a drifting thread for the Micro RS4. Drifting is definitely gaining popularity in the USA!
Harry Chen

We drift! Ever since the touring-car scene started with the Tamiya TA01, we've always dug 4WD sedans that could be pitched sideways in a controlled slide just about forever. We'll keep an eye on the RC drifting scene, and sure; I'll hit the HPI bulletin board and recognize. Maybe shockwave, robstos and spoolin can drop some science on the rccaraction.com BB. (Do people still say "dropping science?" I'm 34, I have no idea.)
—Pete

SETTLE DOWN

You guys really suck! All of you! I've sent you two emails, and I haven't gotten one response! And I had some questions I really needed answered, too! I read your article on installing

no-loss connectors, so I went out and bought a soldering iron and Powerpole connectors, thinking if it looked so easy when the *RC Car Action* guys did it, then I could probably do it. I tried it, and it didn't work! You should be more specific than "When you've coated the wire, stop." You should have said how much solder to use, like "a lot" or "a little"! That would've given me a better idea how much to use. Now I have a battery pack with no connectors and solder on the black wire!
Dsiegel87

Nothing gets me fired up to help a reader more than a letter that starts out "You guys suck!" We get way more email than we could ever hope to answer. But there are hundreds of experienced RC guys ready and willing to help you any time at rccaraction.com. Just check out the RC Zone bulletin board; the guys there will hook you up.

—Pete

YOU SAID IT

"Shiny parts never made a car go faster"

Shiny parts have never made a car go faster. It drives me crazy when I see people admiring cars with fancy rims, expensive paint jobs, or all-aluminum chassis. Whatever happened to the need for speed?

I got into RC thinking the money would be in speed, but it seems as if people spend their money on looks. I have a list of every hop-up I want—anything that will make my car go faster, get rid of heat better, or be more reliable. Some of the things on my list don't exist; a few I made on my own. Some parts work better when they're made of graphite because they're meant to wear out; that's what people don't understand when they get swept up in the all-aluminum craze. Spur gears were meant to be plastic because they mesh better with metal. Plastic is smooth on metal; it doesn't grind. What separates one car from another are the hop-ups that do things, not the ones that show your reflection.

Aaron

RC manufacturers only make what people want, Aaron; if you don't like something, don't buy it (and don't look at my "Street Muscle" project cars in this issue; they're definitely not your style!). If I were you, I wouldn't waste my time worrying about what other people like. There are plenty of real performance parts out there for you to enjoy; who cares if someone else (like me) is into fashion accessories?

—Pete

Each month, "Readers Write" sponsor Team Trinity awards the "You said it" letter writer the Reference body of his choice. This is Trinity's new shell for the Associated RC10GT.



WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

- Peter Vieira: peterv@airage.com
- George M. Gonzalez: georgeg@airage.com
- Bob Hastings: bobh@airage.com
- Kevin Hetmanski: kevinh@airage.com
- Paul Onorato: paulo@airage.com
- Steve Pond: stevep@airage.com
- Greg Vogel: gregv@airage.com

THE LATEST FROM JAPAN and more!

In addition to the latest stuff scoured from the usual sources, this month's "Inside Scoop" features a passel of products spotted by Steve Pond during his journey to Japan for the Shizuoka Hobby and Toy Show. For expanded show coverage, head over to radiocontrolzone.com!



YOKOMO MINI & MICRO

Yokomo displayed a 1/28-scale prototype minicar at the Shizuoka show. According to Yokomo, this new car has a very low center of gravity for better handling characteristics than other 1/28 cars have. The batteries will be mounted flat along the bottom of the chassis; these 270mAh rechargeable cells will reportedly be included with the car. The motor will also be mounted as low as

possible and in front of the rear axle for improved handling. The prototype is fitted with a ball differential and ball bearings, although final production specs have not yet been locked in. According to Yokomo, this new car is designed to fit Kyosho Mini-Z bodies, and that means you'll have a nearly limitless selection of shells.



EXCLUSIVE

The nitro big-truck was just got a little more interesting with OFNA's surprise introduction of the Titan.

This high-riding monster's obvious features include a big-block pull-start engine and an orange-anodized, Max-style raised chassis, but there's a lot more going on with the Titan than that. The chassis plates are 3.2mm thick, and that big-block engine isn't a .21 but a .25! It spins a 2-speed transmission, and power gets down to the center drive shafts beneath the chassis via a helical-cut gear train. There's a slipper clutch built in to the final gear, and "CVA" universal-joint drive shafts with 8mm stub axles meet the Titan's massive wheels and tires. The suspension gets its eight, threaded-body aluminum shocks from the OFNA 9.5 (check out the way they're mounted on the upper arms), and a high-torque (135 oz.-in.) steering servo is included with the Airtronics electronics package. A factory-finished, trimmed and mounted body completes the RTR setup, and OFNA plans to follow up the pull-start Titan with an electric-start version in time for the holiday season. Look for a review as soon as we can get our hands on a test truck!

OFNA Racing (949) 586-2910; ofna.com.



MINI 1/28 scale



Yokomo's "big" 1/24 scale looks hot, but the tiny Puchi Maru just might be even hotter (despite the wack name).

We've all seen teeny-tiny RC cars before, but this micro machine has fully proportional control and includes an FM transmitter! Sounds like racing stuff to us, and sure enough, there are six frequency options for door-to-door action. Body styles include the Honda Fit and Toyota Vitz (Want to see the full-scale cars? Go to Japan) in red or silver, and the cars are charged by the transmitter's batteries in just 2 minutes (or less), with about 5 minutes of run time per charge.

Yokomo USA (949) 252-8657; yokomousa.com.

MICRO Puchi Maru





Tamiya TT-01 XB

Tamiya's series of XB (Expert Built) ready-to-run cars just got a shot in the arm with an all-new chassis that features a shaft-drive system. According to Tamiya, the series has superior weight savings and balance when compared with the previous TL-01 chassis. The new cars also include a high-quality radio system and an electronic speed control. By replacing the mechanical speed control with state-of-the-art electronics, Tamiya has improved functionality and reliability.

The new TT-01 XB will be available with the Honda/Mugen Integra Type-R body or the Subaru Impreza WRC '01 (year may change).
Tamiya America Inc. (800) 826-4922; tamiyausa.com.

A BETTER BOX

The Alpha box is like no other box we've seen. Its dual 540 motors are custom-wound for starter-box duty, and a "Power Increasing Gear System" gives maximum flywheel-turning torque. Holders for spare glow plugs and a glow starter are built in, and a quick-release hatch makes it easy to get into the box without tools for battery-pack changes and maintenance. An on/off switch prevents the Alpha box from being accidentally turned on in your pit bag or trunk when in transit, and all you need to complete the starter is a pair of batteries. Good news: for a limited time, Trinity will offer the box with a pair of battery packs at no extra charge!

Trinity (732) 635-1600; teamtrinity.com.

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**2 Free Battery Packs
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Tamiya **INTEGRA TYPE-R**

Tamiya announced a new 1/10 RC version of the new Honda Integra Type-R. This version is dressed in the same graphics as the car that was driven by Team Beams to victory in the All-Japan Super Taikyu (Endurance) Race Championship. The sharp-looking body is paired with a special TL-01 chassis. The chassis features long-span suspension arms for better cornering ability.

Tamiya America Inc. (800) 826-4922;
tamiyausa.com.

Hot Bodies **Nitro Tourer**

It hasn't been long since Hot Bodies introduced its 1/8 RTR buggy, and now it appears ready to release a nitro touring car.

It isn't clear whether this car will be released as an RTR, but it does have all the right stuff when it comes to features, including competition-type pivot-ball suspension, oil-filled shocks, anti-roll bars, direct steering and a molded tuned pipe. We'll bring you more details as they become available.

Hot Bodies (909) 296-9340; hotbodiesonline.com.

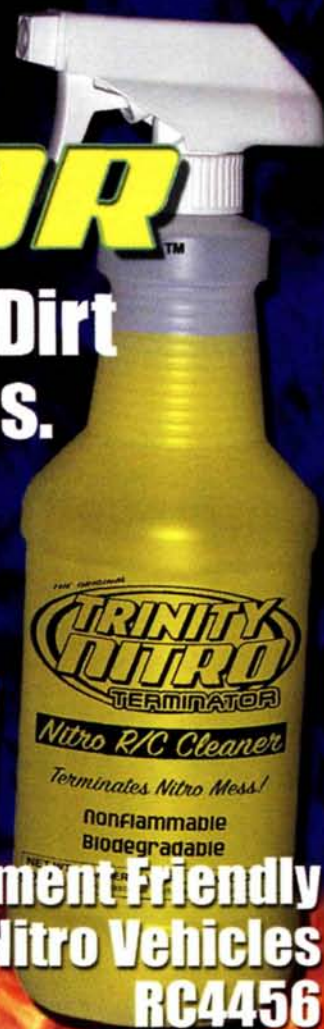


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Pro-Line Flatbeds, Ferrari & 350Z for your Micro RS4

For a unique-looking shell for the Micro, check out these new shells from Pro-Line. The Dodge Dakota R/T, GMC Sierra, Ferrari F360 Modena, and Nissan 350Z bodies all include decals, window masks, overspray film and add-on spoilers.

Pro-Line (909) 849-9781; pro-lineracing.com.

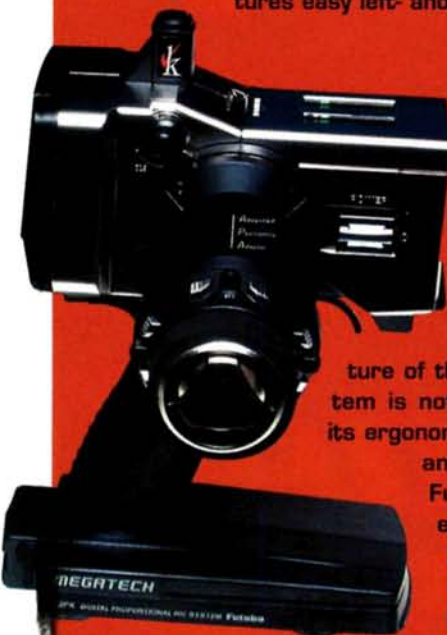


Futaba 3PK

The all-new 3PK radio system features easy left- and right-hand operation, a large rear-facing LCD screen with improved feature navigation and standard and "drop"-style steering-wheel positions. But the key feature of this new radio system is not its interface or its ergonomics; it's performance. According to Futaba, when properly equipped, the 3PK responds to control movements nearly two times faster than any other radio system. The fastest possible response occurs when you use a special receiver in combination with digital servos, but the 3PK is completely compatible with analog servos as well.

Futaba; distributed exclusively by Hobbico/Great Planes Model Distributors Co. (800) 637-7660; futaba-rc.com.

Futaba; distributed exclusively by Hobbico/Great Planes Model Distributors Co. (800) 637-7660; futaba-rc.com.



Team Orion

HAVOK

Orion's new budget mod motor combines a fixed-timing, non-rebuildable design with a ball-bearing-supported armature. A variety of winds is available, from 11 to 27 turns; sounds like the Havok could be a cool way to start a "spec-mod" class at the track with faster-than-19-turn motors. The endbell is fixed, but the brushes and springs are replaceable (of course).

Team Orion (714) 694-2812; team-orion.com.

O.S. .12 TR-T TURBO OUTLAW

This new .12 TR Turbo (TR-T) engine from O.S. surfaced shortly before the show, but now we know the details of this new Outlaw engine.

The .12 TR-T is a 5-port turbo engine that features five genuine transfer ports plus a new, two-piece head design for use with turbo plugs. The T model features a distinctive black engine block and a similarly finished slide carburetor.

O.S.; distributed by Great Planes (800) 682-8948; greatplanes.com; osengines.com.



Trinity picks up Rossi

In other Trinity nitro news, the company is adding more Italian muscle to its engine line by securing the Rossi car engines line and will import both .12 and .21 engines and accessories. It's some trick stuff; according to Trinity, all Rossi pistons and sleeves are

computer matched to ensure a perfect fit. After the sleeve has been made, it is placed in a computer-operated machine that measures the internal diameter of the sleeve and cuts a piston specifically for that sleeve. No pictures yet, but Trinity promises the

Rossi "Maranello" will be the "trickest-looking .21 on the market!". Bring it on!

Trinity Products Inc. (732) 635-1600; teamtrinity.com.

Pro-Line Crowd Pleazer TC

Pro-Line went for un-realism with this unique shell, which is unlike any full-scale car on the road today. According to the company, "Pro-Line and its team of touring car enthusiasts wanted to weed out all of the standard touring car bodies by offering a totally fresh, new look coupled with unbeatable performance." Looks good to us! According to Pro-Line, the Crowd Pleazer TC delivers maximum downforce by holding its included rear spoiler perfectly parallel to the roof line and incorporating an extra-low nose. Window masks, decals and overspray film are included, as usual.

Pro-Line (909) 849-9781;
pro-lineracing.com.



Airtronics **MX-3** Radio System

The new Airtronics MX-3 is a 3-channel radio system. It features a menu-driven digital display that includes adjustment of servo endpoints, dual rate, subtrim, ARC, 5-model memory, servo-reversing and a battery-voltage gauge. This FM system is designed for the Traxxas Maxx enthusiast and is ideally suited to the Maxx because it has a third-channel switch that can be used to change gears or run the forward/reverse transmission.

Airtronics (714) 978-1895; airtronics.net.



NEW MICRO RS4S!

HPI displayed four new Micro RS4 kits. This is the classic Toyota Trueno AE86, which is considered to be the Holy Grail of drifter cars; other new releases include the Mobil 1 PIAA Honda NSX, a Mazda RX-7 and the CLK GTR Mercedes. The bodies will no doubt be available separately as well as with kits; at press time, the Trueno is the latest body to be offered with the Micro RS4 RTR.

HPI Racing
(949) 753-1099;
hpiracing.com.

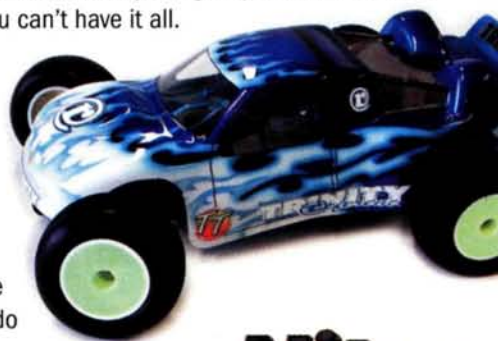
Trinity Reference Pro Truck & Maxx bodies

Works. Trinity wouldn't reveal which products will be offered under the Nitro Works name after they accidentally emailed us

Like all Reference bodies, the new Pro Racing RC10GT body and Monster Truck shell for Traxxas Maxx trucks both feature protective overspray film, window masks and decals. The only thing they don't feature are catchy names, but you can't have it all.

But here's a catchy name for you: Nitro

the logo, but we think it will have something to do with nitro. Just a guess.



Bumper 2 Bumper Racing Billiard-table track

When you think about it, a pool table really is the perfect mini track. It has a hard, flat surface to run on, and the table is already in a good spot for drivers and spectators to stand and get a good view. Damaging the table would be a concern, but not if you get this setup! Bumper 2 Bumper Racing's new pool-table track simply unrolls for racing action. An exterior track wall made of pliable molded rubber is fastened to the racing surface, and the track fully covers and protects the rails, billiard-table cloth and pockets.

Bumper 2 Bumper Racing; bumper2bumperracing.com. ■



readers' rides

YOUR BEST BUILDS

TIM EBERHARDT, ST. LOUIS, MO HPI SUPER NITRO RS4

Give the comeback award this month to Tim and his flamed HPI Super Nitro RS4. About 15 years ago, he ran all-electric cars, but he was out of the hobby for a while. These days, Tim has this stock Super Nitro Lambo; he gave it a paint job that he says even he was surprised with. We're glad that you're enjoying RC again, Tim.



DAN SEPULVEDA, GLENDALE, AZ DURATRAX NITRO QUAKE

Dusk settles across the greater Phoenix area, and Dan Sepulveda wraps up a full day of RC. This is his good-looking DuraTrax Nitro Quake and the custom trailer that he uses to haul his Traxxas Nitro Vee boat. The truck features a ported and polished Torq .21 engine, Torsen diffs, full RAM lighting and a Bolink 55 Chevy Nomad body. Dan says that the trailer wasn't easy to build; it has leaf springs and oil-filled shocks, and it certainly ties the whole package together.



KEITH LYNARD, CARNEYS POINT, NJ TEAM ASSOCIATED TC3

It isn't enough to have a fully tweaked Associated TC3 that intimidates your friends; Keith goes one further and puts Darth Maul on the car's beak, too. The touring car has a 12T Reedy motor, Team Orion batteries and a Novak Super Rooster speed control. The red Protoform CLK Mercedes body is complemented by a set of RPM wheels and HPI slicks.



STEVE KOBAYASHI, TORRANCE, CA TAMIYA FFO1

Steve is quick to point out that his front-wheel-drive Tamiya chassis is all stock—"nothing spectacular." Trust me when I tell you that hop-ups are low on the list of criteria for making it into "Readers' Rides." Steve's JACCS Accord is nicely finished and well photographed—a definite "in" for this page.

This Tamiya Accord isn't the most expensive car on the page—far from it. What is priceless is the amount of time and energy that went into applying the full body decals and the professional look of the car's presentation. Steve is duly proud of his work and offers this encouragement: "If you have a lot of patience, you can accomplish anything."

**READERS'
RIDE
OF THE
MONTH**



WIN A ONE-YEAR SUBSCRIPTION TO RADIO CONTROL CAR ACTION MAGAZINE!

Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

**SGT. ADRIAN CHAVEZ,
FT. SILL, OK
OFNA OB-4**

About five months ago, Adrian picked up an issue of *RC Car Action*, and he already owns two nitro vehicles! This OB-4 HPI Eclipse body is his first airbrush job, and Adrian shows a lot of early talent. The OFNA sedan has graphite shock towers and radio tray, and CV axles harness the RB C-12 engine's power.



**RADCLIFF BRILL,
LOS ANGELES, CA
TEAM ASSOCIATED
FACTORY TEAM GT**

Here's a good-looking GT that sees its fair share of racing at SoCal Raceway in Huntington Beach, CA, and also at Hot Rod Hobbies in Saugus, CA. Radcliff runs an RB Concepts .12 engine for power and uses a variety of RPM and Rocket City components for added strength. His GT has Pro-Line wheels and tires and Futaba radio gear including a 9450 servo for steering and a 9101 servo on throttle duty.



**CHAD McNEESE,
BILLINGS, MT**

TEAM LOSI TRIPLE-XT

When Chad sent this picture, he was eagerly awaiting the start of racing season. I'd feel the same way if I had a sinister-looking Matt Francis Triple-XT waiting to do battle. Chad chose a Team Orion Core motor, a Novak Cyclone ESC and Peak batteries for the "go" department. He uses JR radio gear that includes a Z550 racing servo, and the stadium truck is finished off with a Team Losi Fury body.



LARRY PRINCE, EAST PEORIA, IL TRAXXAS T-MAXX

During his 24 years in RC, Larry has amassed quite a collection of vehicles; this purple T-Maxx is number 39. The project started with a Hardcore .21 conversion kit, and Larry says that was when his RC addiction took over. He added a Rossi .21 with a CVEC exhaust to the chassis, suspension components from Megatech and Powerline shocks. The driveline features a Traxxas diff spool and full MIP CVDs. The big truck rolls on Clod tires with JPS rims that match the Pro-Line Jeep body. Other additions to the nearly 14-pound monster include a KO Propo 180 oz.-in. steering servo, DuraTrax bumpers and a Robinson Racing tranny case and double-slipper spur.

Congratulations to the Newest World Champions!



Masami Hirose
2002 IFMAR 1/12
World Champion
Reedy Ti Modified Motor



Surikarn Chaidejsuriya
2002 IFMAR Touring Car
World Champion
Reedy Ti Modified Motor

REEDY

The Power Behind
TWENTY-FOUR IFMAR World Champions!

How many World Champions use YOUR brand of motors?

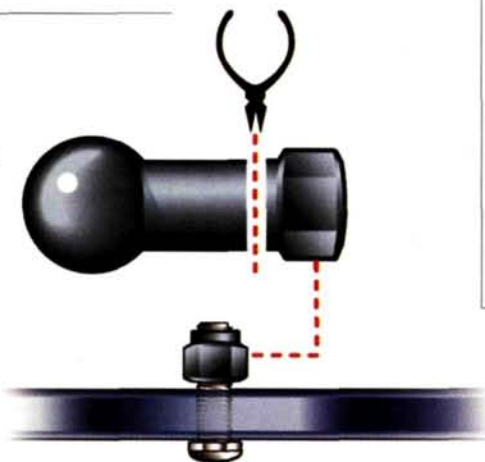
DETAILING SHORTCUT

Most bodies come with a sheet of detail decals that include simulated hood pins. Cutting them out with scissors is a pain; instead, use a single-hole punch. The diameter of the circle it cuts is usually bigger than the decal. With one squeeze, you have cut out a hood pin that is ready to be placed on the body.

*Paul Martin
Batesville, AR*

**DUAL-USE BALL CUPS**

When you use aftermarket ball cups, the body of the ball cup must sometimes be trimmed to make short turn-buckles. Save the trimmed ends and use them as lock-nuts on the chassis. [email] *Jesse Alward*

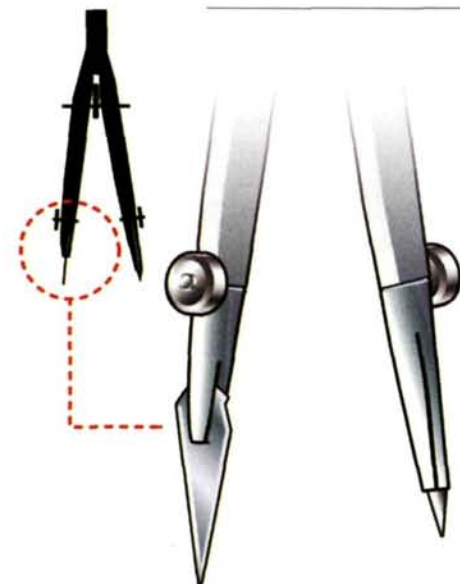
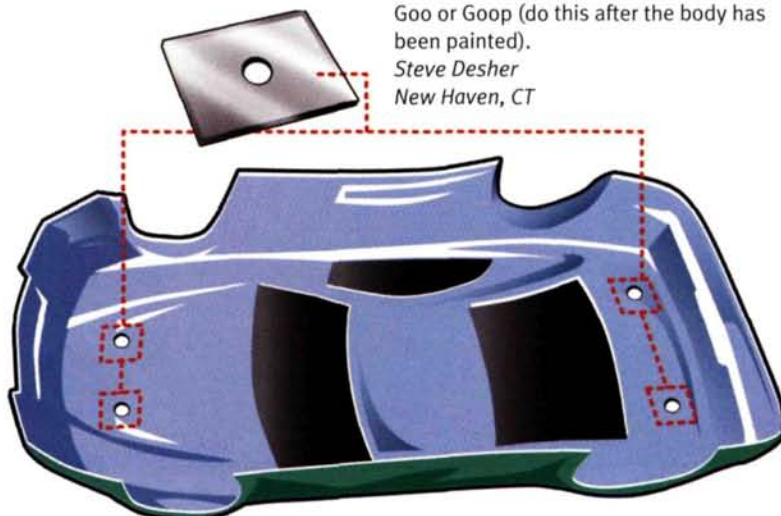
**HANDY PRELOAD GAUGE**

Many kits that include threaded shock bodies also have clip-on preload spacers on the parts trees. Don't toss them out! You can use them as gauges to set the threaded preload collars equally on each corner of the car, or leave them in place between the shock cap and the collar to prevent the collar's setting from changing during a race. [email] *Luke Brooks*

**BODY PROTECTION**

To protect your car's body from getting scuffed on the body clips that support it, cut square "pads" from the waste Lexan you trimmed off the body, and glue them under the body-post holes with Shoe-Goo or Goop (do this after the body has been painted).

*Steve Desher
New Haven, CT*

**HOMEMADE CIRCLE CUTTER**

Instead of buying a circle cutter, use a compass in which you've replaced the pencil lead with a hobby blade.

*Carl Chan
Markham, Ontario, Canada*



EASIER SMALL-DECAL PLACEMENT

Use the blade on your hobby knife as a tool to place small decals on bodies. With the decals stuck onto the blade, they will be easier to line up on the body.

Vien Thai

Cockeysville, MD

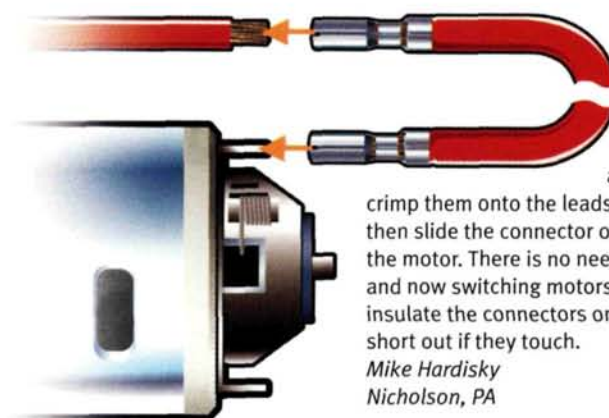
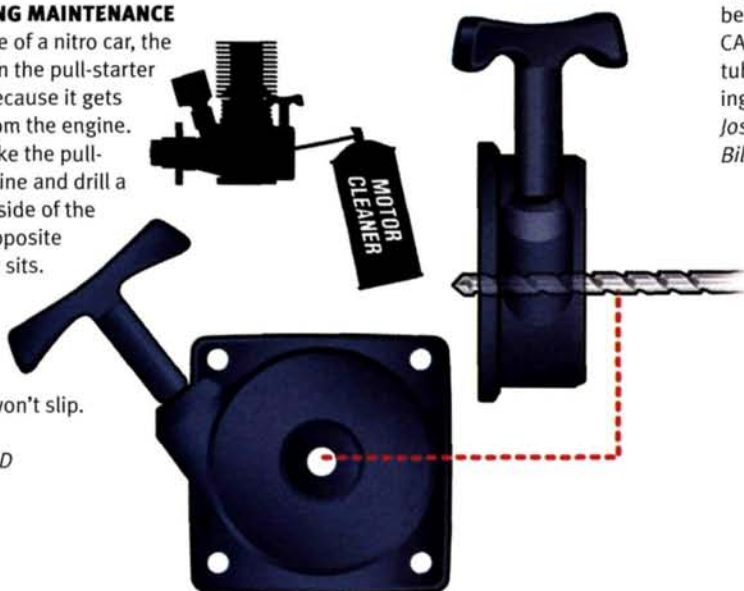
ONE-WAY BEARING MAINTENANCE

After extensive use of a nitro car, the one-way bearing in the pull-starter can start to slip because it gets soaked with oil from the engine. To remedy this, take the pull-starter off the engine and drill a small hole on the side of the starter housing opposite where the bearing sits.

Now you can spray motor cleaner through the hole to clean the bearing so it won't slip.

Josh Knepp

Mechanicsville, MD



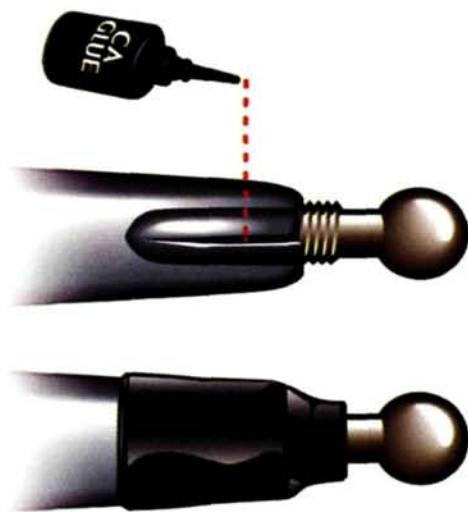
MOTOR-SOLDERING ALTERNATIVE

Beginners who are not yet skilled at soldering can pick up a set of automotive connectors,

crimp them onto the leads coming from the ESC, then slide the connector onto the soldering tabs on the motor. There is no need for an inline connection, and now switching motors is a breeze. Be sure to insulate the connectors on the ESC so they will not short out if they touch.

Mike Hardisky

Nicholson, PA



TEMPORARY PIVOT-BALL A-ARM FIX

Cars with pivot-ball suspensions are likely to crack where the pivot ball screws into the A-arm. Here's a quick fix before you install a new A-arm: put a couple of drops of CA into the crack, then cut a piece of heavy-duty shrink-tubing long enough to cover the crack, and heat the tubing. The fix is only temporary, but it will keep you running.

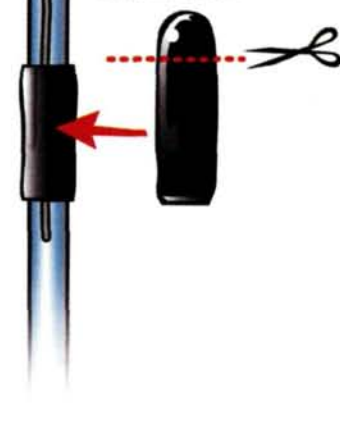
Josh Watts

Billings, MT

ANTENNA KEEPER

If your antenna is longer than the antenna tube and you do not want it to hang free, take the plastic cap off the end of the tube and cut off about 1/8 inch. Slide the cut piece down the tube to hold the excess antenna.

Robert Milton
Lincolnshire, IL



"Pit Tips" are submitted by readers and are screened for functionality, feasibility and safety but are not tested by Radio Control Car Action. Radio Control Car Action and the submitting authors are not responsible for personal injury or damage to models or tools resulting from readers' use of "Pit Tips."

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troubleshooting

YOU'VE GOT PROBLEMS? WE'VE GOT FIXES.

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RRP
 ROBINSON RACING PRODUCTS
QUICK GT FUEL-TANK FIX

I have an RC10GT Factory Team truck with a damaged fuel tank. One of the fuel-tank mounting screws broke off, and its threaded part is stuck in the fuel tank. The tank is held in place with three screws but, unfortunately, the single rear screw is the one that broke, so there's no way to tighten down the tank. I ordered a replacement tank from my hobby shop; while I'm waiting, is there a way to fix the tank temporarily? [email]

Steven Marsh

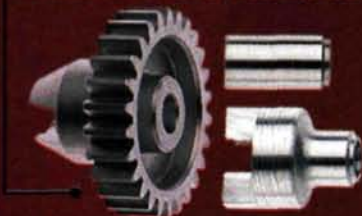
If you can't grip the end of the broken screw with pliers, it will be nearly impossible to remove the screw without damaging the fuel tank. The usual screw-removal methods will not work in this case. Luckily, the fuel tank is mounted flush on the chassis, and that means you'll be able to temporarily secure the tank with Shoe Goo. Simply apply the glue to the bottom of the tank and place it on the chassis. Secure the tank with the two remaining screws, and you should be good to go. The Shoe Goo holds up well and will allow you to race your truck while you await the replacement tank. Use steel screws to install the new tank instead of the aluminum ones provided in the kit.



You can't beat the versatility of Shoe Goo; this stuff sticks to anything. The glue will secure the tank for a temporary fix.

REAL PERFORMANCE PRODUCTS!**Traxxas Lightened Spur And Double-Disc™ Slipper Kits**

RRP's NEW line of Lightened Spur and Double-Disc Slipper Kits for Traxxas Nitro and T/E-Maxx trucks are designed to improve performance and increase reliability. This combo incorporates a machined steel or Super-Tough plastic spur, a Vented Aluminum Clutch Plate/Gear Adaptor (small or large), 2 Slipper Pads and 2 Plates to deliver the adjustability you need and the increased performance that you demand. **Complete Slipper Kits** are available in the following sizes: RRP 8166 Slipper Kit with 66T Super-Tough plastic spur (Stock Size) for E-Maxx; RRP 8172 Slipper Kit with 72T Super-Tough plastic spur for Traxxas Nitro; RRP 8465 Slipper Kit with 65T Steel Spur for Traxxas Nitro; RRP 8472 Slipper Kit with 72T Steel Spur (Stock Size) for T-Maxx. Spurs, Clutch-Plate/Gear Adaptor and Slipper Pads also sold separately.

T-Maxx Forward ONLY Hardened Gear Kit

This kit contains a 26T hardened aluminum output gear, a forward drive hub adaptor and spacer. RRP 8585

Nitro and T/E-Maxx Accessory Spurs

A wide range of spurs fit our Double-Disc Slipper Kits. Choose from machined Super-Tough plastic spurs in 66, 68, 70, 72 and 76T sizes, RRP 82XX, or CNC machined steel spurs available in 65, 72 and 76T sizes, RRP 83XX. Small Clutch Plate/Gear Adaptor fits 65 thru 70T spurs. Large Clutch Plate/Gear Adaptor fits 72 thru 76T spurs.

Traxxas Nitro Hardened Steel Clutchbells

CNC Machined from solid steel these bells are built to last. They take the 5x11 bearing. (NOT included). Available in 19T, RRP 8119, 20T RRP 8120, 21T RRP 8121 and 23T RRP 8123.

T-Maxx Hardened Forward Primary Gear

Machined from solid aluminum and hard coated. A direct replacement for the stock gear. RRP 8528

48P Absolute Series Pinions

Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even on-off noise is gone! Available in 48P in 16T thru 28T sizes, RRP 1416 - RRP 1428.

48P / 64P SuperLite Aluminum Pinions

They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T, and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions

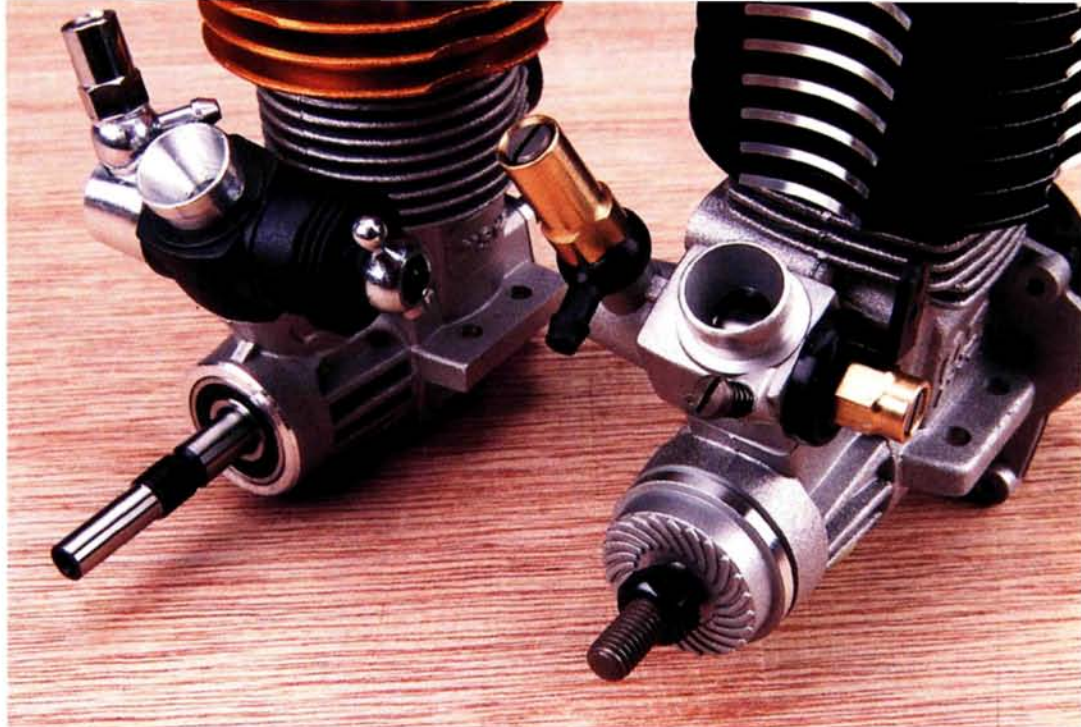
These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

Make No Compromises.

www.robinsonracing.com

SG OR PILOT SHAFT? THAT IS THE QUESTION.

I own an HPI RS4-2 and plan to get a new engine for it; I'm aiming for a Novarossi RS 12 engine. After a bit of research, I found out that there are two types of crankshafts for it—SG and standard. What's the difference between these two types of crankshafts? The engine is also available with a slide carb or a rotary carb. Which version will fit my car without any modifications? [email] Arel T. Z.



In SG-type engines, the pilot shaft is built into the end of the crankshaft, while standard engines have threaded crankshafts and require a clutch nut with a built-in pilot shaft. Only standard crankshaft engines can be installed in your vehicle, and HPI provides the clutch hardware for that installation. So stick to a standard crankshaft engine. Your vehicle comes with the necessary linkage to install both slide and rotary carburetors. Again, if you're looking for the simple way out, pick up the rotary-carb version.

The engine on the left has an SG-style crankshaft and slide carburetor, while the engine on the right is a standard (threaded) crankshaft design. Stick to the standard design.

NEW T-Maxx Steel Diff Gear Set



T-Maxx / E-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel Phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with 10 .003" shims. 2 sets needed per truck. RRP 8590

NEW T-Maxx Aluminum High Performance Brake Kit



New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. RRP 8560

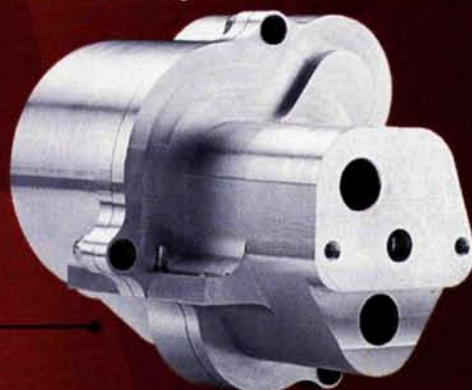
www.robinsonracing.com

T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 8551 Blue, RRP 8550 Natural Silver

Forward ONLY Racing Gearbox For T-Maxx



Precision CNC machined from aircraft grade billet aluminum this Forward ONLY Racing Gearbox will give your T-Maxx a serious competitive edge. RRP 8595

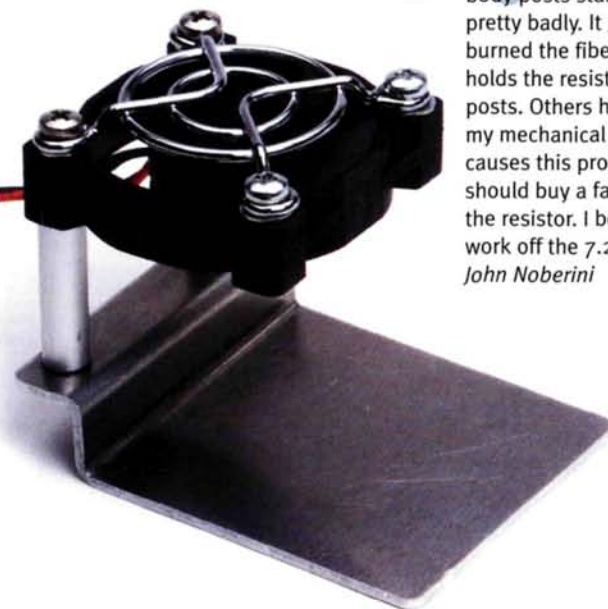
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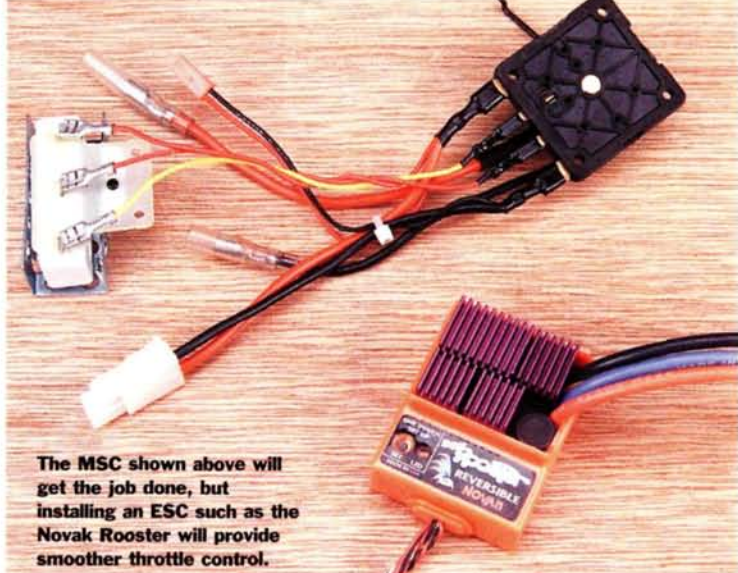
A fan such as this one will help keep the MSC running cool, but it's wiser to install an ESC.



SMOKIN' MONSTER

My question concerns an older truck. I recently bought a Kyosho USA-1 (I am a sucker for the real truck), and I test-ran it in bone-stock trim to make sure it ran OK. It ran fine for the first 10 minutes or so, then the white resistor between the two rear body posts started to smoke pretty badly. It got so hot that it burned the fiberglass piece that holds the resistor to the body posts. Others have told me that my mechanical speed control causes this problem and that I should buy a fan to place over the resistor. I bought the fan and then realized it requires 12 volts to operate. Will this fan work off the 7.2V battery pack? If not, how can I solve my smoking USA-1 problems? [email]

John Noberini



The MSC shown above will get the job done, but installing an ESC such as the Novak Rooster will provide smoother throttle control.

The USA-1's stock MSC is a heavy-duty unit, but it isn't designed for extended running at slow to moderate speeds. Running the vehicle for more than 5 minutes without a cooling-down period will tax the MSC and overheat the resistor. Installing the fan you mention will help—and yes, it will function at a lower operating voltage—but it would be better to invest in a top-quality ESC. ESCs operate more efficiently than MSCs, which means you'll get smoother throttle control, longer run times, and your motor and batteries will run much cooler, too. Just make sure that the ESC you choose can handle dual-motor applications.

RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 1570 RRP 1571 Pull Start

Stealth Sedan Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck. RRP 1860 thru RRP 1896.

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs. RRP 1538

RS4 Top Shaft Pulley



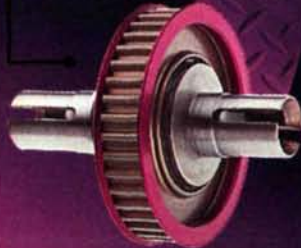
One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1585

RS4 Complete Ball Diff Units



Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley. RRP 1590 Electric RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys. RRP 1539 nitro sedans RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer. RRP 1535

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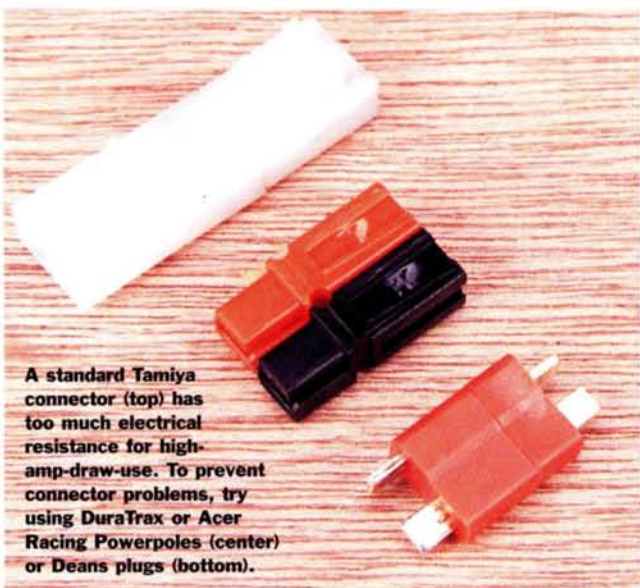
RS4 Nitro 32 Pitch Conversion Kit is available. RRP 1536

COOKED CONNECTORS

I have a problem with my Novak Super Rooster ESC: the battery connectors keep on melting together after every run. This makes separating the connectors very difficult. I have already replaced the connections once, but the problem continues. Please tell me what makes this happen.

Jacob Linn
Marshall, TX

A standard Tamiya connector (top) has too much electrical resistance for high-amp-draw-use. To prevent connector problems, try using DuraTrax or Acer Racing Powerpoles (center) or Deans plugs (bottom).



You didn't mention the type of vehicle or type of motor and batteries you use, and that makes it difficult to diagnose your problem. Your vehicle could be over-gearred (running a higher gear ratio than recommended), your drive train could be binding (causing the motor to strain), or you might be running 7 cells and a modified motor. Any of these conditions will cause the stock Tamiya battery connectors to overheat and possibly melt. Check to see whether your drive train binds by removing the pinion gear and rolling the vehicle on a flat surface. If binding isn't evident, install a pinion gear with fewer teeth (or a spur gear with more teeth) to lower your vehicle's final gear ratio. If the problem continues, I recommend that you install high-performance, low-resistance connectors from Deans, DuraTrax, or AstroFlight.

TOOLBOX

RPM BEARING BLASTER

Blast away debris from your bearings with the RPM Bearing Blaster. Clean bearings are an essential part of maintaining a car or truck. The Bearing Blaster quickly and easily eliminates dirt and grime from the bearing with the help of your favorite motor spray. The Blaster is made of durable plastic, designed in three pieces, and it properly positions the bearing for a thorough cleaning. It works with all bearings that have a minimum inside diameter of 1/8 inch (3mm) and a maximum outside diameter of 3/4 inch (19mm).

Item no. 81170; \$8.95

RPM R/C Products (909) 393-0366;
rpmrcproducts.com.



NEED HELP?

Send your "Troubleshooting" questions and comments to George M. Gonzalez, georgeg@airage.com.

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MLP shoes. RRP 2365

www.robinsonracing.com

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jammin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP/EP-R

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima

Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 RRP 1680.



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STREET MUSCLE



3 Electric- Power Projects

by Peter Vieira

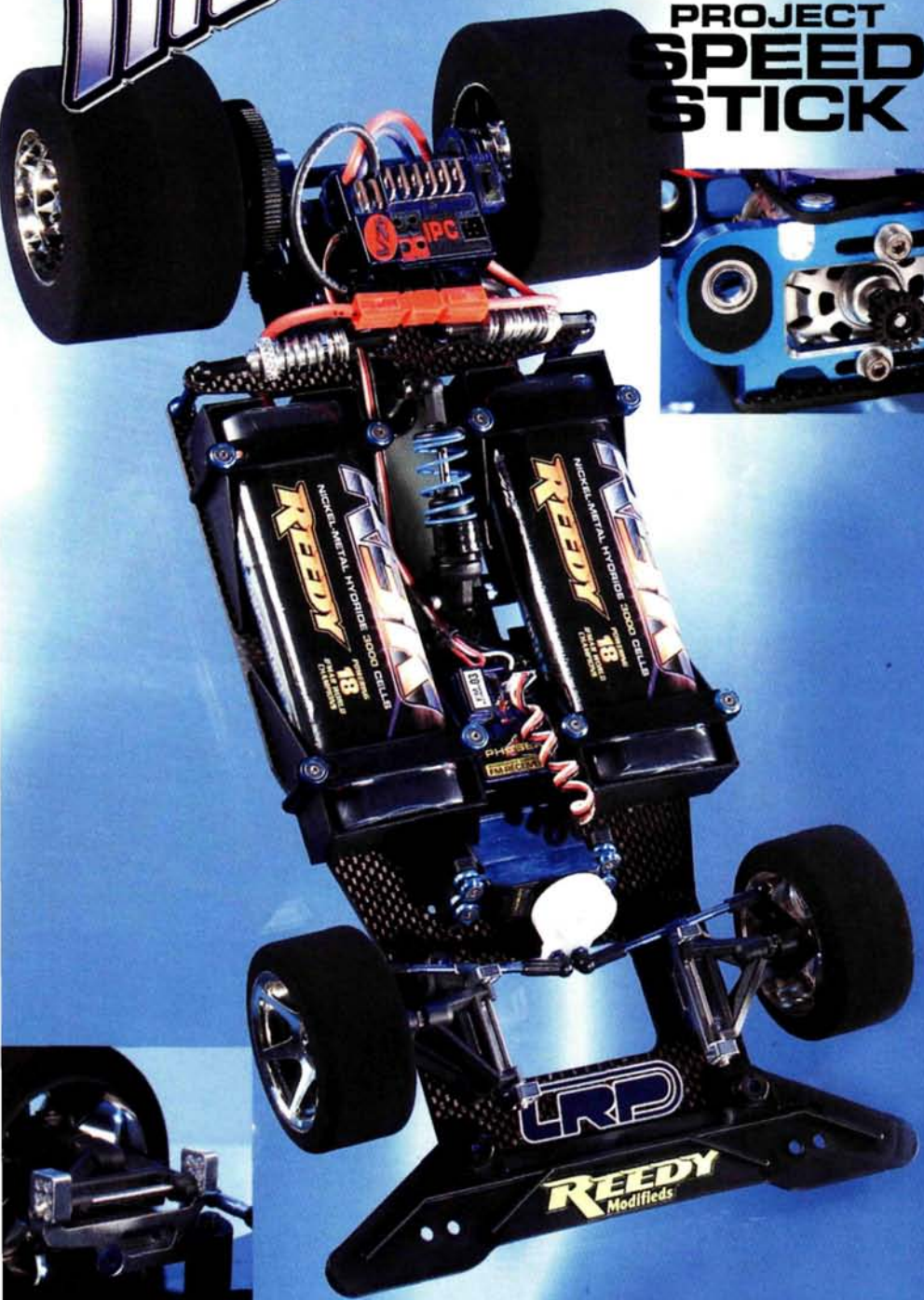


Nitro cars are great, but nothing fires me up more than shooting a high-voltage electric car across a parking lot. Unless you're up against Charlie Stomm, no nitro machine can match the off-the-line, instant power delivery of an electric machine. No noise, no smoke, but if you want real power in the form of pavement-ripping torque, batteries are the only way to fly. And if you really want to go fast, there's no better place to do it than the street (and by *street*, I mean "on pavement"; don't go playing in traffic!), and that's what prompted the creation of the project machines you see here. Wide tires, mod motors and big batteries always add up to a good time!

STREET MUSCLE



PROJECT SPEED STICK



It's a simple formula: put lots of batteries into a light car, add a modified motor, and you go fast. Very fast. With that sort of action in mind, I chose an Associated RC10L3 touring car as the base for a big-tire street import with an emphasis on straight-line performance. I also wanted stick-pack power for the sake of quick-change convenience. Parma Hemi tires were first on the list of must-add items; in addition to providing an appropriate steamroller stance, the giant meats also raised rear ride height considerably. Rather than wrangle the chassis back to its original, low ride height, I simply omitted the spacer blocks from the car's Dynamic Strut front suspension to increase the front ride height. For blasting across parking lots, I figured taller would be better. Project Speed Stick has pebble- and bottle-cap clearance to spare!

STREET STORY

I took the fully prepped Speed Stick out to the biggest parking lot I could find and set up the official *Radio Control Car Action* radar system for some high-speed passes. I rolled the trigger on gently to get the car under way and then pinned it. It was a sketchy ride, as the battery-laden, high-riding chassis and the full-width front foams caused the car to wander. Instead of fighting it, I just let the chassis settle itself; that's what the big parking lot was for. Once at speed, the Speed Stick was actually pretty stable, and man, was it fast! It burned past the radar at 60.1mph. Although built for straight-line speed, the car was a surprisingly not-bad handler, at least as far as parking-lot cruising goes. But I enjoyed the car most when I scaled the power back to one pack instead of two. As much fun as 12-cell speed runs are, the still-fast Speed Stick ran longer on one pack, and there was much less wear and tear on the motor and electronics; it even handled better, too.

Big tips for big batteries

Before the Speed Stick could get the green light, I had to take steps to make sure that the LRP V7.1 ESC didn't go "poof." Step one was to install a receiver pack so that the power of all 12 cells wouldn't be pumped into the receiver. Step two was to let the batteries sit for a while after peak-charging so that their voltage would level off. These steps allowed Associated's Cliff Lett to run 14 cells in his "Guinness Book" world-record-attempt TC3 without incident, so I figured I'd be safe running my V7.1 with two stick packs (12 cells total). But remember, no matter how you slice it, running more cells than your ESC is officially rated to handle and/or using a lower-wind motor than your ESC is rated for means your warranty is toast!

ELECTRONICS

Airtronics

- M8 transmitter—item no. 90280; \$289.99

LRP

- Phazer receiver—LRP8401; \$94.99
- Quantum Pro Reverse ESC—LRP8430; \$164.99

Reedy

- Ti Modified 11-double motor—379; \$64.99
- R3K 3000mAh stick packs—632; \$64.99

DuraTrax

- Powerpole connectors—2300; \$4.99

DRIVE TRAIN

Kimbrough

- 96T spur—142; \$4.89

Robinson Racing Products

- 19T Absolute pinion—1419; \$5.59

Acer Racing

- Ultrasonic bearings—DSMS; \$1.99

SUSPENSION

Irrgang Racing Service

- Aluminum caster blocks—IRS372; \$49.95

Tamiya

- "Hard" touring-car spring—53440; \$16.79

CHASSIS

SpeedMerchant

- Gear-Up bulkhead set—5050B; \$49.95

OFNA

- 3mm concave washers—10343; \$8.95/20

WHEELS AND TIRES

Parma

- Hemi rear wheels—17109; \$22.49/pair
- Front chrome wheels—17013; \$17.39/pair

BODY

Protoform

- 190mm Civic—1439-00; \$21.19

Prices vary with dealer.



The inspiration for this truck came directly from GPM and its full line of blue-anodized Rustler dress-up parts. The GPM parts can be bolted on without modification, and the moving parts pivot on Delrin bushings—pretty trick. After I had installed all the blue stuff, I had only to slam the suspension (or “hammer it,” as the truck guys say) and install some silly street rubber. Dropping the truck to the ground was as simple as installing shorter shocks. Sure, I could have used internal limiters, but then the shocks would have been left with nearly zero travel. And besides, the long-shock-body/short-shaft look is just lame. I upgraded to “long” Traxxas Big Bore shocks (the stock rear shocks are “extra-long”) and fine-tuned the ride height by moving the lower shock mounts farther in or out on the arms. To give the Road Rustler a rollin’-on-dubs look, I installed RPM Talonz wheels and Pro-Line Road Hawg II rubber. A Pro-Line body was the finishing touch—paint by my boy Kevin Hetmanski.

STREET STORY

I confess that the Road Rustler was built primarily for its shelf appeal, and little thought was given to sorting out a street-ready suspension setup. Much to my surprise, the truck actually handled pretty well; with its wide track and sticky street rubber, traction wasn’t an issue, and it cornered much flatter than I expected. Of course, power wasn’t a problem, thanks to the Stock Metal Hydride team pack and the Trinity D4 hand-wound motor (which I recycled from the ridiculous Very Mad Fighter I built for the February issue).

From a standing start, the Road Rustler seems to jump almost instantaneously to top speed. This is especially impressive when you consider the extra heft of the aluminum parts. The truck’s tranny got a workout, thanks to the combination of warm-bubblegum traction and mod-motor power, but it never popped; I’m sure the Traxxas steel drive yokes helped. The Road Rustler whistled past the radar gun at 31mph—not as exciting as the Speed Stick’s nutty top speed, but remember, the Rustler is running on only 6 cells!



PROJECT ROAD RUSTLER

ELECTRONICS

KO Propo

- EX-11 Presto transmitter—KOP80002; \$179.96

LRP

- Phazer receiver—LRP8401; \$94.99
- Quantum Pro Reverse ESC—LRP8430; \$164.99

Trinity

- Stock Metal Hydride Race pack—NR3106; \$69.99
- D4 modified motor—D4311R; \$53.99

Prices vary with dealer.

DRIVE TRAIN

Traxxas

- Heavy-duty steel drive yokes—4628X; \$18.99/2

Robinson Racing

- 18T Absolute pinion—1418; \$5.59

SUSPENSION

GPM aluminum parts

- Shock towers (F/R)—TE1028/TE1030; \$25 each
- Suspension arms (F/R)—TE1055/TE1056; \$35 each
- Front steering arms—TE1021; \$25
- Front C-carriers—TE1019; \$25
- Front skidplate—TE1003; \$20

Traxxas

- Big Bore shocks (long)—2661; \$27.99/pair

Lunsford

- Titanium tie rods—1069 (2 in.), 1072 (2 3/8 in.), 1073 (2 1/2 in.); \$9.25/pair

CHASSIS

Team Losi

- Battery strap—LOSA4116; \$4

OFNA

- 3mm concave washers—10343; \$8.95/20

RPM

- Blue gear cover—80405; \$5.95

WHEELS AND TIRES

Pro-Line

- Road Hawg II tires—1060-00; \$13.99/pair

RPM

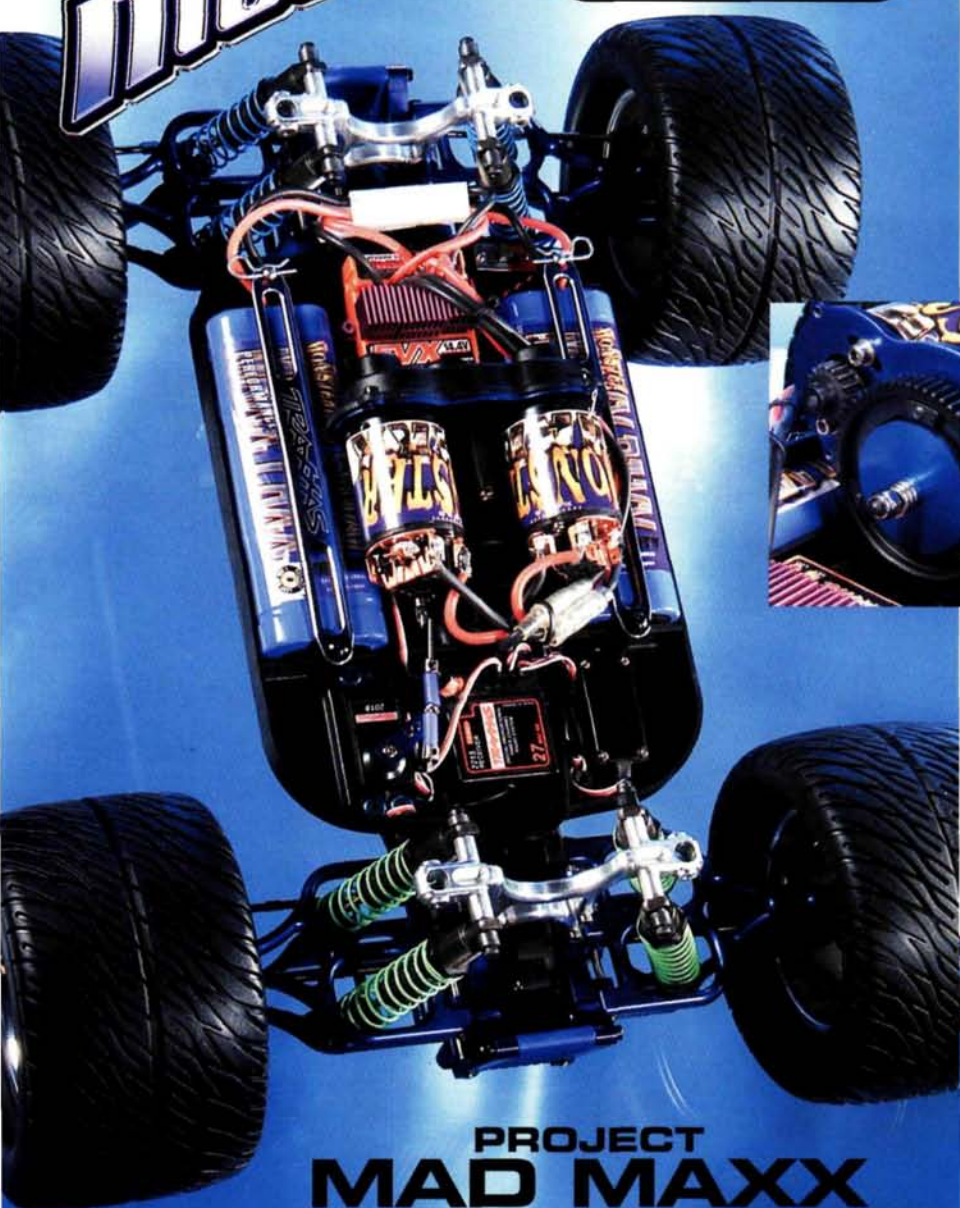
- Talonz wheels (F/R)—81703/81683; \$10.49/pair

BODY

Pro-Line

- Ford F-150—3084-00; \$21

STREET MUSCLE



PROJECT MAD MAXX

Yes, I know the pretty-Maxx-truck thing has been done a million times, but I haven't built one yet, so there! And besides, I wanted to try TRC Off-Road's new Maxx tires (which, ironically, are for on-road use in this case). Just adding the super-size sneakers would be enough to transform the E-Maxx into a street machine, but I naturally wanted to do more. Most of the eyeball appeal comes from the Hardcore Racing Components stuff, but the Traxxas battery straps help out, too, and those Trinity motors look sweet perched up high above the chassis. You'll also notice that I trimmed the skid-plates for a bumper-less look—not good for off-roading, but a much cleaner look for the street.

The real star of the E-Maxx show, however, is a completely stock part: the Traxxas EVX speed control. This Novak-built bad boy is factory-wired to handle a pair of packs in series (14.4 volts yo!) as well as dual motors. Just plug the stuff in and go—no questions asked.

STREET STORY

Yep; the no-bumper look is hot, but I totally forgot the wheelie-bar effect the rear bumper provides. As soon as I unloaded the Trinity Monster Maxx motors into first gear, Mad Maxx instantly flipped onto its Zegers-painted lid. Ouch. I decided to leave the truck in second gear for more restrained launches, but the truck was still a wheelie machine. This made full-throttle drag starts impossible, but it was fun to roll on the throttle and lift the wheels and see how long I could sustain a balanced wheelie. Once I had mastered it (kind of), it was totally cool and way more fun than just sitting a truck on its rear bumper; that's cheating! Even when I wasn't wheelieing

the Mad Maxx, it usually had at least one wheel in the air. Even with limiters in the Losi shocks, it would hit the three-wheel motion in anything but the slowest turns. I have no desire to tune it out; I like the three-wheel action!



THE STUFF

ELECTRONICS

Trinity

- Maxx Paxx—RC5896; \$69.99
- Monster Maxx Wild 550 motors—9242; \$39.99 each

DRIVE TRAIN

Robinson Racing Products

- Lightened spur and double disc slipper kit with 66-tooth plastic spur—8166; \$32.50
- Hardened differential gear set—8590; \$42.50

SUSPENSION

Hardcore Racing Components

- Aluminum suspension arms (blue)—HCR-03041; \$235
- Aluminum one piece shock towers (silver)—HCR-03124; \$49 each

■ Titanium pivot balls

(blue)—HCR-03501; \$39/set of 4

Traxxas

- Titanium turnbuckles (F/R)—2338x/2339x; \$15/\$16

Team Losi

- 1.2 in. shock set—LOSA5034, \$29.00
- Threaded shock body 1.2 in.—LOSA5057, \$19.95
- Blue spings—LOSA5160, \$2.50
- Green springs—LOSA5158, \$2.50

CHASSIS

Hardcore Racing Components

- Aluminum chassis braces (blue)—HCR-03031, \$65

RPM

- T/E-Maxx bulkhead braces—80155; \$8.95

Traxxas

- Machined-aluminum bulkheads (F/R)—3930x/4929x; \$75

WHEELS AND TIRES

TRC Off-road

- Park premounted tires—TGY01C; \$39.99/pair

GPM

- Quick-Change wheel nuts—TMX 1500; \$23

BODY

Pro-Line

- Ford excursion—3099-00; \$28

Prices vary with dealer.

SOURCE GUIDE

ACER RACING (310) 472-8090; acerracing.com.

AIRTRONICS (714) 978-1895; airtronics.net.

DURATRAX distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

GPM distributed by Hobby Etc.

HARDCORE RACING COMPONENTS (661) 294-5032; racinghardcore.com.

HOBBY ETC. (603) 595-8549; hobbyetc.com.

IRRGANG RACING SERVICE (609) 476-2371; teamirsrc.com.

KIMBROUGH (714) 258-7425; kimbrough-products.com.

KO PROPO USA INC. (310) 532-9355; kopropo.co.uk.

LRP distributed by Team Associated.

LUNSFORD RACING (541) 928-0587; lunsfordracing.com.

OFNA RACING (949) 586-2910; ofna.com.

PARMA/PSE (440) 237-6333; parmase.com.

PRO-LINE (909) 849-9781; pro-lineracing.com.

PROTOFORM INC. distributed by Pro-Line.

REEDY distributed by Team Associated.

ROBINSON RACING PRODUCTS (209) 966-2465; robinsonracing.com.

RPM R/C PRODUCTS (909) 393-0366; rpmrcproducts.com.

SPEEDMERCHANT distributed by Hobby Etc. (978) 597-3344; teamspeedmerchant.com.

TAMIYA AMERICA (800) 826-4922; tamiya.com.

TEAM ASSOCIATED (714) 850-9342; teamassociated.com.

TEAM LOSI distributed by Horizon Hobby Inc. (800) 338-4639; teamlosi.com.

TRAXXAS CORP. (888) 872-9972; traxxas.com.

TRC (732) 635-1600; teamtrinity.com.

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

HPI Nitro RS4 3 Type SS

THE ALL-NEW, SHAFT-DRIVEN NITRO RS4 3 DEBUTED AS AN RTR (see the June 2002 issue of *RC Car Action* for the review), but HPI hasn't forgotten us do-it-yourself types. Whether you like to build your own so you know the job was done right, or you plan to make some mods along the way, or you just like to build, you'll be glad to know that you can now assemble a Nitro 3 from the ground up. You'll also be glad to know that the kit car isn't "just" a Nitro RS4 3; it's a "Type SS," which means you get the new Nitro Star 12R SS engine (good for more than 1hp, says HPI), a smooth-flowing, round-port manifold, 2-speed transmission and steel turnbuckles—a combination that adds up to more tunability, more power and more speed. Exactly how much more? Well, that's why we test cars





**2 MORE POWER,
SPEEDS,
AND YOU GET TO BUILD IT.
KITS RULE!**

track test

HPI NITRO RS4 3
TYPE SS



HPI HAS BEEN BUILDING ITS NITRO CARS ON 2.5MM PURPLE-ANODIZED CHASSIS FOR A WHILE NOW, AND THE SS IS THE LATEST.

To get here, all you need to do is yank out three body clips and remove the steering and throttle output arms. If you have an extra 30 seconds, you can also remove the fuel tank for total access to the chassis.



DATA CENTER

VEHICLE TYPE .15-powered nitro touring car

BEST BUYER Performance-minded enthusiasts and budget-minded racers

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit/finish Very good

Durability Very good

Overall performance Excellent

SPECIFICATIONS

MANUFACTURER HPI

MODEL Nitro RS4 3 Type SS

SCALE 1/10

PRICE \$340

(Price varies with dealer)

DIMENSIONS

Wheelbase 10.04 in. (255mm)

Width 7.87 in. (200mm)

WEIGHT

Total, as tested 50.6 oz. (1,434g)

CHASSIS

Type Plate with removable upper deck

Material 2.5mm purple-anodized aluminum, molded plastic

DRIVE TRAIN

Type Shaft-driven, full-time 4WD

Primary 18T/22T clutch bell, 43T/47T spur gear (2-speed)

Transmission ratio 2.92:1

Final drive ratios First gear

7.63:1; second gear 5.71:1

Drive shafts Steel dogbones

Differentials 4-gear bevel

Bearing type Rubber-sealed and metal-shielded ball bearings

ENGINE AND ACCESSORIES

Engine HPI Nitro Star 12R SS

Starter Pull-start

Manifold Body-on, tubular

Pipe HPI dual-chamber tuned type composite plastic

Fuel tank 75cc, with vented cap and plunger-type primer

SUSPENSION

Type Lower H-arm with steel turn-buckle upper links

Shocks Plastic-body, fluid-damped with clip-on preload spacers

WHEELS

Type HPI Split 6

TIRES

Type HPI 26mm D-compound X-pattern with foam inserts

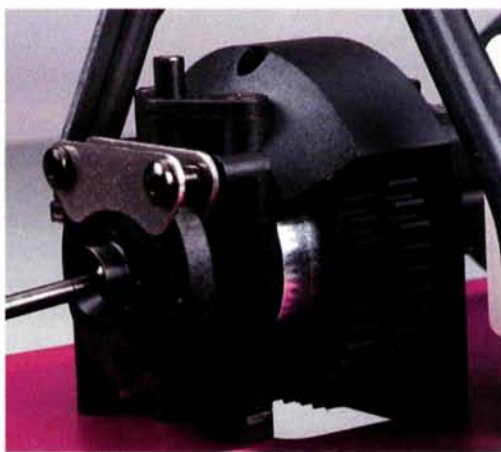
KIT FEATURES

CHASSIS. HPI has been building its nitro cars on 2.5mm purple-anodized chassis for a while now, and the SS is the latest. The chassis sides are radiused for extra strength, and the underside is fully countersunk, as expected. An elaborate molded enclosure for the receiver battery with a separate cover for the receiver itself fills the left side of the chassis, and it's also home to the externally mounted steering and throttle servos. The receiver cover is screwed down, but battery access is gained by removing a single body clip. Two more body clips secure the entire radio-tray assembly, and this makes it easy to remove all the electronics without reaching for a single tool.

DRIVE TRAIN. The Type SS shares its essential shaft-drive parts with the RS4 MT and Super Nitro Rally, so you know they're tough. The front and rear gear diffs each house two spider gears, and their cast metal ring gears are spun by chunky bevel pinions with deeply meshing teeth. The front diff has the additional feature of a stiff spring between the spider gears. The spring forces the gears against the outsides of the diff case, which adds resistance to the diff's action and reduces its tendency to "unload" when a wheel breaks traction. Plastic gearboxes surround the diff and pinion gears to prevent any nasty parking-lot stuff from reaching the parts, and steel dogbones join the diffs to the 2-speed transmission in the chassis' center. Steel 'bones are also used to link the stub axles to the drive train, and all of the parts spin on a combination of rubber-sealed and metal-shielded ball bearings.

The Type SS's 2-speed transmission shifts centrifugally via a spring-loaded steel drive dog that engages a hardened drive pin. Two drive-dog springs are included to match the transmission's shift-rpm range to the type of engine being used; since the Type SS includes a high-output race engine, the stiffer of the two springs is used. To further tune the transmission's shift point, spring preload is externally adjustable via a setscrew.

Unpadded steel caliper plates squeeze a single plastic brake disc to slow the Type SS. A fiber disc is available as an option, but HPI makes the most of the stock disc by giving it a thick, 4mm cross-section and molding it of very hard plastic.



Left: the Type SS's competition engine is its most significant feature, but this 2-speed is a close second. The plastic brake disc won't wear as long as a fiber unit will, but it performed well, and its extra thickness will help it outlast thinner plastic rotors. **Above:** turnbuckles: you gotta have 'em. The Type SS's steel units aren't sexy, but they're all you'll need for no-disassembly camber- and toe-tuning.

SUSPENSION/STEERING. The Nitro RS4 3 borrows its suspension parts from the well-proven RS4 2, which means you get a lower H-arm/upper camber link setup. But instead of using non-adjustable plastic camber links (such as those on the RS4 3 RTR), the Type SS includes steel turnbuckle linkages for fast camber adjustments without disassembly. The steering tie rods are also turnbuckles, so toe-in is just as easy to adjust. In addition to changing camber-link length, there are two inboard and two outboard camber-link positions to choose from for the front end, and two inboard and four outboard locations in the rear. Other suspension geometry changes can be made by swapping included parts; the stock steering hub carriers provide 10 degrees of caster but can be replaced with 8-degree parts, and

the kit's standard rear uprights, which deliver 2 degrees of rear toe, can be swapped for 1-degree versions.

Plastic-body shocks suspend the car and are filled with "no. 300" shock oil, which is equivalent to 30WT silicone fluid. Only one set of shock pistons is provided, but it's doubtful the Type SS's target buyers will miss the tuning option of extra pistons; I didn't. Purple-anodized collars and plastic eyelets

BUILDING & SETUP TIPS

The Nitro RS4 3 manual's full-size parts legends and clear line drawings, combined with very good parts fit and finish, make assembling the kit relatively easy, but the instructions are light on text and could have more strongly emphasized potential points of confusion. Everything you need to know is in there, but if you aren't focused on the instructions, you might make a few goofs. Here's what to watch out for, plus some tips I found useful.

STEP 3. The drive-dog assembly is factory-assembled with the silver spring; you'll need to remove the setscrew to replace the silver spring with the black one suggested by the manual. Be careful not to lose the steel ball beneath the spring.

STEP 8. If found that tightening the brake caliper step-screws caused the brake to drag, so I backed them out 1/2 turn. Hey, I never said these tips were fancy.

STEP 10. The diff screws are a tight fit in the housings, and their tiny heads are easily stripped if you hack on them. To do the job right, use a precision no. 1 Phillips screwdriver, and grease the threads a bit to help them turn more easily. Also, be sure to grease the backs of the front diff's spider gears so they don't prematurely wear the plastic diff housing.

STEP 13. Make sure that you install the shock tower on the rear gearbox in this step. If you forgot which gearbox is the rear (easy to do, since the front and rear units appear identical once they're assembled), just operate the diffs in each; the hard-to-turn diff is in the front gearbox.

STEP 14. Use the hinge-pin brace with the hole in the center for this step. The manual notes the correct part with a "!" symbol, but it's easy to install the wrong part because the front and rear hinge-pin braces both fit the rear-suspension bulkhead.

STEP 27. Insert the O-rings in the shock caps before you fill the shocks; once they're filled, you won't have two hands free to insert the O-rings.

YOU'LL NEED

- Transmitter and receiver
- Steering and throttle servos
- Fuel
- Receiver battery
- Polycarbonate-compatible paint

FACTORY OPTIONS

- Super Shock set—item no. A111
- Wide universal dogbones—A513 & A514
- MIP Shiny CVDs (F/R)—80803/80804
- Fiber brake disc—A844
- Nitro racing clutch—A885
- Heavy-duty final gears (38T/13T)—A856/A857
- Swaybar set—A209
- Stainless steel hinge-pin set—A261
- 3mm 7075 Super chassis—73914

STEP 31. Note the orientation of the stepped and beveled surfaces of the clutch gears; the manual illustrates the parts correctly, but you must look closely.

track test

HPI NITRO RS4 3 TYPE SS

cap the bodies, which do not use internal bladders, and progressive-rate springs do the actual shock-absorbing; clip-on spacers are used to set ride height.

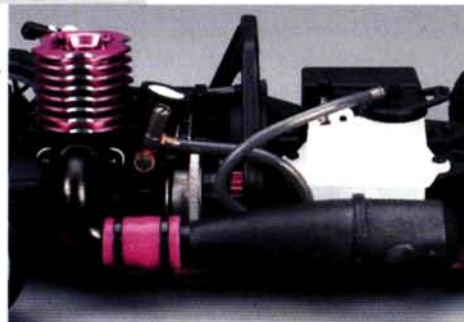
ENGINE AND ACCESSORIES. The Type SS gets its name from its engine—the new Nitro Star 12R SS. Thanks to its blacked-out case and purple-anodized heat-sink head with natural-aluminum accents, the engine is a looker, but it's what's inside that counts. Thanks to porting described as "aggressive," HPI claims the 12R SS unloads more than 1hp when its 2-needle, rotary carburetor is opened. The sleeve is special, too; it's coated with nickel-silicon carbide, an extra-hard material that shouldn't be confused with plain nickel. This new coating is harder than chrome, less hazardous to the environment to produce, and very slippery. It's already popular in full-scale racing applications; you can find nickel-silicon-carbide coatings on the pistons of super cars and racing motorcycles. It's serious stuff. The exhaust system is also a critical part of the power package. The Type SS includes the same composite-plastic, dual-chamber tuned pipe as the RTR Nitro 3, but a free-flowing tubular exhaust manifold replaces the RTR's square-cornered, cast header.

A steel clutch bell with thread-on, purple-anodized pinions hides a 2-shoe clutch. Instead of a wrap-around spring, each shoe is independently sprung



Above: here's the heart of the Type SS: HPI's Nitro Star 12R SS engine. It has a nickel-silicon-carbide-coated sleeve, 2-needle carb, trick blacked-out case and machined aluminum mounts.

Right: this dual-chamber, composite-plastic tuned pipe is the same as the RTR Nitro RS4 3's, but the Type SS's exhaust flows into the pipe more freely, thanks to a tubular manifold.



with mousetrap-style springs such as those found in 3- and 4-shoe clutches.

The RS4 3's class-standard 75cc fuel tank features a cap-mounted pressure fitting to minimize fuel foaming, and the tank also includes an O-ring-sealed primer pump. Distinctive anthracite-colored silicone tubing completes the fuel-delivery system.

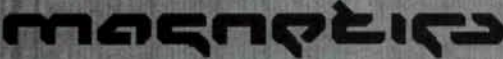
BODY, WHEELS AND TIRES. HPI offers the Nitro RS4 3 Type SS with a choice of a Pontiac Firebird Trans Am or an Acura RSX body. Unless you have no idea what cars look like these days,

or you started reading the magazine from the back, you already know I built the RSX version. Bob Hastings threw the paint for me, and he decaled the body, too. Not that decaling is a big chore, since the Type SS includes die-cut decals that are ready to peel

and stick; no X-Acto knife is required. A thick, pre-cut foam bumper protects the body, and it's easy to mount the shell correctly, thanks to molded-in body-post dimples and HPI's cleverly telescoping body posts.

The Type SS's rolling stock is well matched to the car's likely performance/play mission. It's the same setup as used on the RTR Nitro 3: Split 6 wheels and D-compound, 26mm X-pattern tires with foam inserts. Full-scale auto enthusiasts who know their racing rubber will recognize the X-pattern treads as clones of Yokohama Advan Ao32R racing tires.





VEN-1042MC. MAGNETICS.

Want to spend more time tearing up the tarmac and less time gluing tyres? Well, Venom Racing have the answer. Our new Magnetix range is available in four funky rim styles, all featuring a high gloss chip resistant chrome finish with pre-mounted and glued radials. Just take them out of the box, bolt them on and you are ready to go.

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VEN-0610. VENOM SYSTEMS CHECK.

The Venom Systems Check plugs in line with any component in your radio system, performing a number of continuous checks on critical operating parameters and indicating status via a bright LED. Some of the things that the VSC will inform you of are as follows: Circuit breakdown in the receiver or switch. Switch harness problems. Crystal and filter problems. Control range problems and also low battery voltage.



Futaba 3PDF transmitter

As much as I appreciate the incredible flexibility of Futaba's Super 3PJ, all I really need in a radio can be found in the 3PDF. All the most-used, most-wanted features (steering and

throttle end-points and dual rate, exponential, subtrims ...)



are easy to access and change, and I don't think there's another radio with a more comfortable grip. It's also as reliable as FM systems come, and it's very affordable, compared with everything-but-the-kitchen-sink systems.

Other items used to complete the HPI Nitro RS4 3 Type SS:



Trinity Nitro Metal Hydride receiver pack

Trinity Monster Horsepower 20% nitro fuel

Futaba S9304 steering and throttle servos

Acer Racing Glu tire glue

PERFORMANCE

After an extended break-in period (the super-hard sleeve coating requires more break-in time than nickel or chrome) and a little low-end needle tweaking to get the engine to rev crisply from idle, I gave myself the green light to "see what it could do." I lined up the Type SS with the far end of the parking-lot test track and pulled the trigger, and the car launched hard. The left rear tire lit up just long enough to make the Type SS sidestep a few degrees, then all four tires hooked up and the car straightened out (the limited-slip front diff idea seems to work; the front diff never unloaded). The shift to second gear came late, so the SS didn't reach top speed as quickly as it could have, but the top speed itself

was impressive: 46.2mph. After a few more passes and a couple of 2-speed adjustments, I had the SS shifting into second just as the engine reached peak horsepower. For parking-lot drag racing, the Type SS will be tough to beat;

it blasts off the line and snicks into second smoothly (especially for a drive-dog-type shifting mechanism) to quickly reach its top speed. There are faster cars in the Nitro RS4 3's class, but the Type SS can get to its 46mph top speed much more quickly and eats up less real estate in the process. Other cars might touch 50mph, but if they need more room to get there than the parking lot provides, you win.

That takes care of the speed testing. How does this thing handle? As I would expect of any full-time 4WD car, the Type SS understeers if you push it hard, but it's a very mild understeer—much less noticeable than I expected. On-power, mid-turn handling was very good, with plenty of steering available. The limited-slip front diff no doubt helped keep the front end hooked up. Although the diff can still unload if you completely lift a front wheel, the limited-slip diff sends much more power to the wheel that still has traction than a free-spinning diff is going to. The kit-suggested suspension setup helps, too; as the manual's setup page reveals, the camber links, caster blocks and rear hub carriers are all set for

maximum traction. This helps the D-compound sneakers hook up like softer rubber, without the notoriously short life span of competition tires. This overall "grippiness" improves the RS4 3's braking as well, and full-power stopping distances were short if I didn't overcook the brakes and lock up the wheels. The brakes modulate well without pulsing, but the plastic rotor was showing wear after a day of running.

THE VERDICT

In case you hadn't already guessed, I'm very happy with the Nitro RS4 3 Type SS. With its race-legal, high-output engine, free-flowing tubular manifold, 2-speed transmission and fully adjustable suspension, the Type SS is an ideal budget-friendly race car—if you care to race. Like most nitro tourers, the Type SS is likely to see more action in parking-lot grudge matches than in organized races, and that's where the car truly shines. Parking lots are generally full of debris that can wreak havoc on drive belts, but the RS4 3's shaft drive is impervious to such damage. Likewise, the kit's rubber-sealed bearings are virtually maintenance free, and the enclosed receiver and battery bays prevent your gear from getting grungy. Last, when it's time to clean a day's worth of fuel residue and road grit from the chassis, you only need to remove three body clips to release the electronics from the chassis and gain access to the car's vital parts. The Type SS is easy to run, easy to drive fast, and easy to live with; that's my kind of nitro car.

FOR PARKING-LOT DRAG RACING, THE TYPE SS WILL BE TOUGH TO BEAT.



DISLIKES

- Lack of wrenching room makes it difficult to adjust rear turnbuckles.
- Hey, HPI; any chance you could toss in some front universals?
- Plastic brake rotor works well, but it won't last.

SOURCE GUIDE

ACER RACING (310) 472-8090; acerracing.com.

FUTABA; distributed exclusively by Hobbico/Great Planes Model Distributors Co. (800) 637-7660; futaba-rc.com.

HPI RACING (949) 753-1099; hpiracing.com.

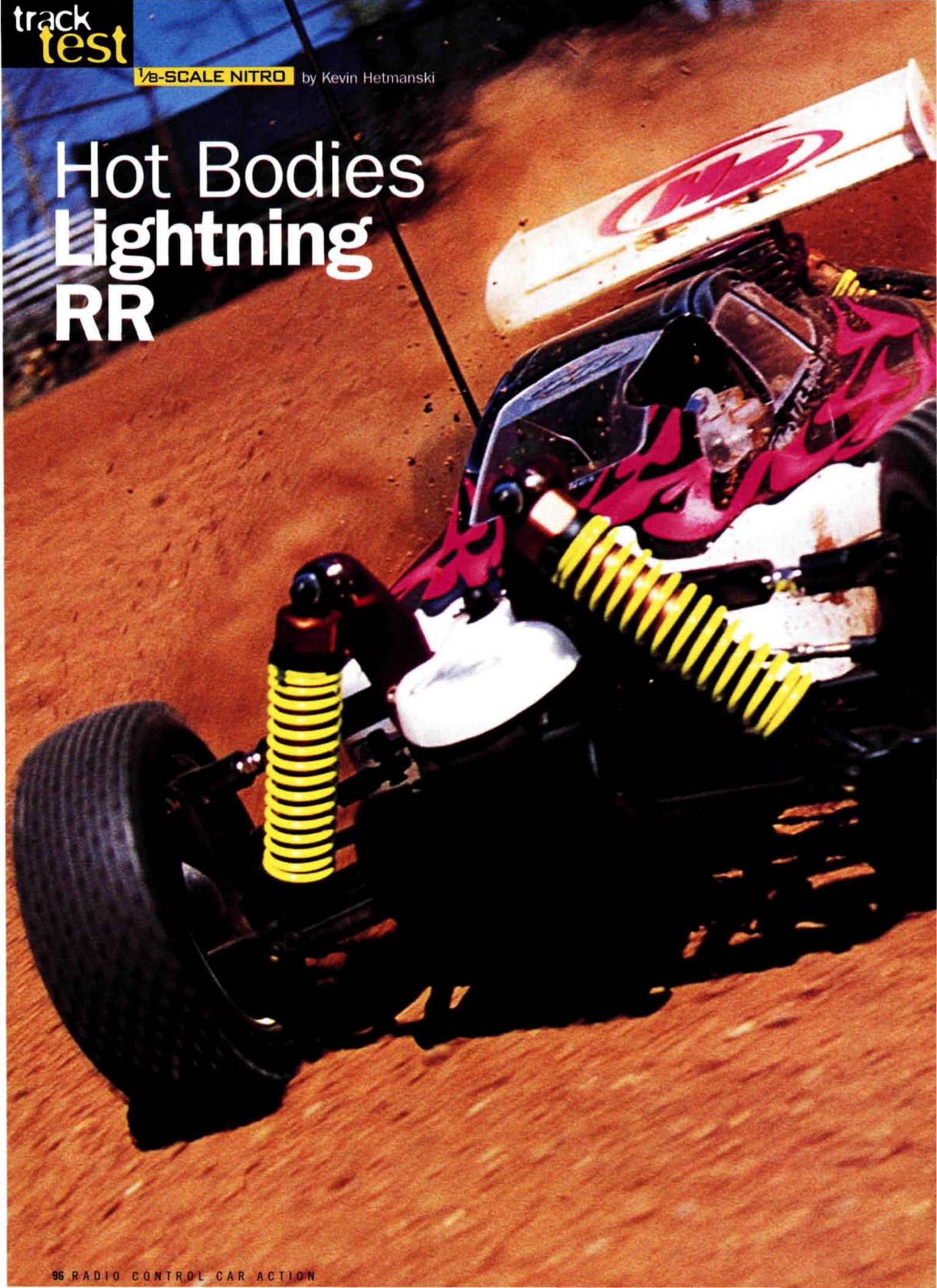
TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

THE COMPETITION*

	CHASSIS	DRIVE TRAIN	DRIVE AXLES (F/R)	ENGINE	TRANSMISSION	CAMBER LINKS	PRICE**	REVIEWED
Associated TC3	2.5mm	Shaft	MIP CVD	Not included	2-speed	Turnbuckle	\$295	5/02
DuraTrax Street Force ARR***	2.5mm	3-belt	Dogbones	Velocity 15 pull-start	2-speed	Turnbuckle	\$220	9/00
HPI Nitro RS4 3 Type SS	2.5mm	Shaft	Dogbones	12R SS pull-start	2-speed	Turnbuckle	\$340	9/02
Kyosho V-One S	3mm	3-belt	Dogbones	GS15R pull-start	Single speed	Pivot ball	\$285	8/01
Tamiya TG10	2.5mm	Shaft	Dogbones	.12LT	Single speed	Threaded rod	\$235	2/99
Traxxas 4-Tec ARR***	2mm	3-belt	Universal joint	TRX-15 electric start	2-speed	Turnbuckle	\$290	4/99

*Partial list; category is too large to include all comparable vehicles **Price varies with location ***ARR = "almost ready to run"; kit is assembled but does not include radio gear

Hot Bodies Lightning RR





YOU NEVER KNOW WHEN IT'S GOING TO STRIKE

HOT BODIES, EH? Let's see, I guess they make ... oh, I don't know ... bodies? Well yes, Hot Bodies (HB) is known for its variety of Lexan shells, but over the past couple of years, the HB gang has been churning out all kinds of products to go under those shells and to upgrade a variety of cars—everything from hop-up parts and shock absorbers to chassis-tuning fixtures and bench-top accessories. But who expected HB to unveil a new car? Not this guy. And I certainly wouldn't have guessed it would dive into the car market with an $\frac{1}{8}$ -scale buggy—make that an RTR $\frac{1}{8}$ -scale buggy. Actually, make that an RTR $\frac{1}{8}$ -scale buggy that former IFMAR ISTC World Champion Atsushi Hara will race officially. That buggy is the Lightning RR, and I was the first person outside of Hot Bodies to give it a full test.



The Lightning's front suspension is a traditional big-buggy setup: cast steering knuckles, C-carriers and wishbone upper arms. Turnbuckles are used throughout.

Silicone gaiters protect the shock shafts, and a rear swaybar is standard equipment. Spacers on the rear outboard hinge pins allow wheelbase to be adjusted.



I'm a sucker for cleanly routed fuel lines, so I'm definitely down with the fuel tank's screw-on tubing clips.



DATA CENTER

VEHICLE TYPE 1/8, 4WD, .21-powered off-road buggy

BEST BUYER Any nitro enthusiast who wants a tough, powerful buggy with racing potential

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Not available at present

Parts fit and finish Very good

Durability Good

Overall performance Good

SPECIFICATIONS

MANUFACTURER Hot Bodies

MODEL Lightning RR

SCALE 1/8

STREET PRICE \$420

DIMENSIONS

Wheelbase 12.8 in. (325mm)

Width 12 in. (305mm)

WEIGHT

Total, as tested 126.4 oz. (3,583g)

CHASSIS

Type Radiused plate

Material "Bronze"-anodized 3mm aluminum

DRIVE TRAIN

Type 3-diff shaft drive

Primary 13-tooth clutch bell/

46-tooth steel spur gear

Transmission ratio 3.3:1

Final drive ratio 11.7:1

Drive shafts (F/R) Universal

joint/dogbones

Differentials 6-gear sealed bevel

Bearing type Metal-shielded

SUSPENSION (F/R)

Type Lower H-arm w/turnbuckle

upper link

Shocks Aluminum-body, fluid-

damped with clip-on preload space

WHEELS

Type 7-spoke plastic

TIRES

Pin-spike, factory glued

ENGINE & ACCESSORIES

Engine Hot Bodies .21 rear-exhaust

pull-start

Manifold Aluminum round-port,

spring-mounted

Pipe Aluminum dual-chamber

Fuel tank 125cc primer-less,

cap-vented

THE LIGHTNING'S CHASSIS PLATE IS TASTEFULLY ANODIZED IN A BRONZE-LIKE HUE, AND ALL THE UNDERSIDE SCREW HOLES ARE COUNTERSUNK.

KIT FEATURES

CHASSIS. HB follows the standard buggy playbook in the chassis department: a 3mm aluminum plate with radiused sides and about 3 degrees of stamped-in kick-up. The plate is tastefully anodized in a bronze-like hue, and all the underside screw holes are countersunk (as you'd expect). The opening for the flywheel appears roomy, so starting the engine should be easy if you ever decide to replace the stock pull-start powerplant with a bump-start engine. Topside, plastic stone guards flank the chassis, and a steel-rod brace stiffens its hindquarters. A 2mm plate-aluminum brace links the steering-bellcrank posts to the front gearbox, but there's no rod brace to join the plate to the chassis. The Lightning's radio gear is stored on the right side of the chassis; a 2mm aluminum radio tray with plastic standoffs is home to the steering and throttle servos, and an enclosed plastic box keeps the receiver and its battery away from the elements.



Above: the Lightning's "bronze" chassis sets it apart from the blue and purple crowd. There are about 3 degrees of stamped-in kick-up, and the chassis has droop-screw pads.

Above right: the Lightning's pull-start engine produces plenty of power for play action and runs well.

Right: all 1/8-scale buggies should include steel spur gears like the Lightning's. Note the chassis-mounted brake-rotor guide.

DRIVE TRAIN. A steel spur gear is the heart of the Lightning's drive train, and it's wrapped around a plastic-cased center differential. This diff is held on the chassis by molded mounts, and an aluminum brace prevents them from spreading under load. Single-disc brakes on each side of the diff provide independently adjustable front and rear braking. Each brake uses a steel rotor and padded steel caliper plates, and molded guides prevent the rotors from fluttering. The front and rear diffs are joined to the center unit by thick steel dogbones and are spun by cast ring-and-pinion gears. All three diffs are grease-filled at the factory, but they can be filled with silicone fluid thanks to gasket seals and O-ring seals.

Dogbones make the leap from the rear diff to the stub axles, CV-style universal-joint axles do the job up front, and industry-standard 17mm hex hubs grab the wheels.

Naturally, all the drive-train parts spin on ball bearings. Can you even remember the last time you saw a bushed big buggy?

SUSPENSION AND STEERING. The Lightning's signature "bronze" anodizing reappears on its shocks, which are otherwise very much like those of comparable buggies: aluminum bodies, double O-ring seals, bladder caps, clip-on preload spacers and silicone shaft gaiters are standard. The shocks are pinched by a combination of wishbone upper arms and lower H-arms up front; straight camber links are matched with lower H-arms in



the rear. Turnbuckles equip both ends of the car for quick camber changes.

In the steering department, the Lightning relies on a pair of thick plastic bellcranks and an aluminum drag bar with two Ackerman positions. A cam-type servo-saver is built into the right bellcrank, and it may be adjusted by means of a knurled preload adjuster; reaching and turning the adjuster is, however, difficult. Turnbuckle tie-rods allow quick toe adjustments, and cast steering knuckles rotate on bush-

ings in their molded C-carriers.

ENGINE AND ACCESSORIES. The Lightning's pull-start, rear-exhaust .21 engine is topped by a substantial 11-fin heat-sink head and includes a fully adjustable 2-needle slide carburetor. Inside, a chrome-plated sleeve is standard, and the conrod is a chunky hunk of machined aluminum; everything looks tough. Power is transferred from the engine to the center diff through a 3-shoe clutch and a steel clutch bell, and exhaust exits through a good-looking black header and an aluminum dual-chamber tuned pipe.

A class-standard 125cc fuel tank feeds the engine and has a built-in fuel filter, a cap-mounted pressure fitting and a catchment area for spilled fuel that diverts it to a hole in the chassis plate. A splashguard mounted alongside the tank keeps spilled fuel away from the brakes, and neat freaks will appreciate the tank-mounted fuel-tubing clips that keep the chassis looking organized while they prevent the fuel lines from bouncing around beneath the body.

BODY, WHEELS AND TIRES. I tested the Lightning with a production body, but the custom paint you see in the photos is just that—custom. The Lightnings that land on dealers' shelves will feature a solid yellow paint job, but HB plans to offer other designs, too. Stud-pattern HB tires with foam inserts pull the big buggy around the track and are factory-glued to attractive 7-spoke wheels.



INCLUDED ELECTRONICS & ACCESSORIES

Hot Bodies didn't have the Lightning's radio package squared away in time for our tests, but the HB brand setup will be equivalent to the Airtronics Blazer Sport I used during my testing. The transmitter will have adjustable steering dual rate, and "standard"-type steering servos will be included (I tested it with the Blazer's included 94102 servos). Box-to-dirt time will be short, thanks to the included glow starter, plug wrench, fuel bottle and AA batteries for the transmitter and receiver.

YOU'LL NEED
■ Fuel

Byron Race 2500 fuel

This is the same juice as the Mugen Seiki guys used to take first, second and third at the 2001 On-Road Worlds, so I'm thinking it's good stuff. The Race 2500 blend has a little less oil than Byron's other fuels (11 percent instead of 12 percent), but Byron claims the ratio of synthetic oil to castor oil that makes up that 11 percent total lubrication has been altered to 60:40 for additional lean-run protection. Sounds good to me; all I know is the Lightning ran great on the stuff!



Orion Pro 1100 receiver pack

Lightning buyers will make their first runs with the included 4-cell battery holder and AA alkaline cells, but I tested it with a Team Orion Pro 1100 rechargeable pack. In addition to paying for itself (replacing alkalines gets expensive pretty quickly), the Orion pack is tougher than a 4-cell holder; the cells can't jump out, and the thick, flexible, 20-gauge wire is stronger than the thin, stiff stuff used for AA holders.

PERFORMANCE

The Lightning's HB engine had already been broken in during our "First Look" photo shoot (see the July issue, if you missed it), so all I had to do was yank the pull-starter and hit the dirt. After sitting with fuel in the tank between runs, the engine took a few extra pulls to fire up, but once it had started, warmed up and cleared out with a couple of full-throttle rips, it was ready to roar. If you're experienced with pro-caliber racing .21 engines, you'll notice that the HB powerplant doesn't produce as much power, but if you're moving up from a .12 or .15 machine, you'll be suitably impressed. All the "oomph" you need to roost a vacant lot, BMX track, or any other patch of dirt is readily available, and if you're a new racer, you'll probably be quicker on the track with the Lightning's mild (relatively speaking) engine than you would with a faster-than-you-can-handle powerplant.



THE LIGHTNING GIVES UP NOTHING TO COMPARABLE RTR BUGGIES IN THE CORNERING DEPARTMENT

If you plan to race the Lightning, I strongly suggest that you upgrade to a high-torque steering servo; even if you just want to play with the car, a servo swap is a good move. A "standard" servo (which I define as a servo with 40 to 50 oz.-in. of torque) just isn't enough to steer an 1/8-scale buggy effectively; you'll need to slow it considerably to get around tight turns, and steering response will be slow. After I had put a tank of fuel through the car with a "standard" steering servo, I installed an Airtronics 94738Z unit with 88 oz.-in. of torque, and the Lightning was instantly a better handler, if not as good as it could be with a 100 oz.-in. servo.

The Lightning turned in crisply and broke loose in a four-wheel drift when pushed hard. Staying on the gas brought the rear end around until counter-steering was fed in, or I tightened the steering line by backing off the trigger. On high-traction surfaces, the Lightning tended to unload its diffs to the unweighted inside front wheel if I squared sharp turns aggressively and tried to get right back on the gas; replacing the grease in the diffs with silicone fluid would cure this.

I'd say the Lightning gives up nothing to comparable RTR buggies in the cornering department (servos notwithstanding). As for bump handling, the Lightning is on a par with the rest. Like the other "sport" buggies I've driven, damping is a bit thick. This can make it feel less composed on bumpy tracks, but the extra damping helps prevent the shocks from bottoming harshly. You could easily change to lighter shock fluid if you prefer a softer setup.

THE VERDICT

As an RTR, the Lightning RR is pretty well dialed. It has—or will have—all the convenience features you expect in an RTR (glued tires, painted body, installed radio gear), and there are some bonus items (glow starter, fuel bottle, AA batteries); and everything is well put together. The engine is well matched to the chassis, and the suspension is fully adjustable. Of course, HB has taken some cost-cutting measures—the plastic diff housings and "standard" steering-servo stand out—but you do get a steel spur gear, and the diffs are sealed and ready for silicone fluid. As for that standard steering servo, well, let's hope that HB will consider upgrading the Lightning to a high-torque unit. This goes for all RTR big-buggy makers: give us more servo! If Traxxas and Tamiya can put high-torque servos in their monster trucks, you can put 'em in your buggies. OK; rant over. It's easy to see the Lightning RR's race potential, and it's even easier to appreciate it as an RTR fast-fun machine. It will be interesting to see how well Atsushi can put it through its paces.

DISLIKES

- HB plans to include a "standard" steering servo that isn't ideal for 1/8-scale buggy use.

SOURCE GUIDE

AIRTRONICS (714) 978-1895; airtronics.net.

BYRON ORIGINALS; distributed by Mugen Seiki, (949) 707-5607; mugenracing.com.

HOT BODIES (909) 296-9340; hotbodiesonline.com.

TEAM ORION (714) 694-2812; team-orion.com.

THE COMPETITION

	CHASSIS	DIFF	SHOCK	STEERING	ENGINE	PRICE**	REVIEWED
DuraTrax Axis RTR	3mm	Shielded	Universal/dogbone	Plastic	Hitec Lynx	\$499	3/00
GS Racing Storm RTR	3mm	Shielded	Universal/dogbone	Steel	JR XR3	\$560	11/01
HB Lightning	3mm	Shielded	Universal/dogbone	Steel	HB	\$420	9/02
OFNA Hyper 7 RTR	3.5mm	Shielded	Universal/dogbone	Steel	Airtronics Blazer Sport	\$550	3/02
OFNA MBX R2 Plus RTR	3.18mm	Rubber sealed	Universal/dogbone	Steel	Airtronics Blazer	\$549	7/02

*All chassis are aluminum; dimension refers to thickness. **Price varies with dealer.

Tamiya TRF414MII



We test Tamiya's



world championship winner

DURING A CONVERSATION I HAD A FEW YEARS AGO with a prominent RC manufacturer, we discussed what the result would be if a company such as Tamiya ever decided to fully develop a race car. Sure, Tamiya had introduced "race" cars in the past, but what we speculated about was the kind of vehicle that could be produced if Tamiya focused its considerable resources on the full development of a competition car.

Tamiya products have a reputation for exceptional quality. The company is a master of molding composites, and that's a critical element of a modern competition touring car's construction. We agreed that Tamiya would be very tough competition if it ever set its sights on the racing market. Well, guess what? Tamiya went racing!

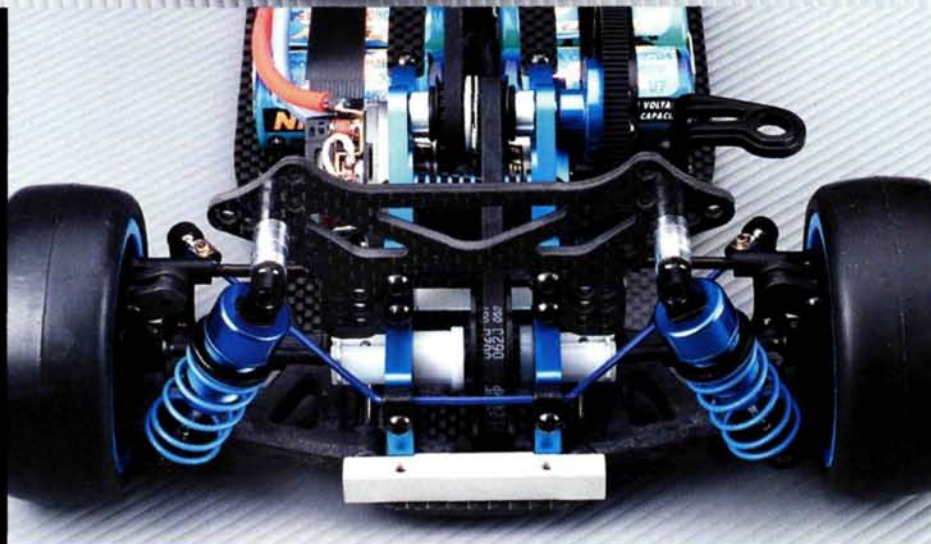
The TRF414MII is the latest in a generation of competition touring cars that was begun four years ago. The genesis of the program was the TRF404X; it was followed by the limited-production TRF414X that mostly went to team drivers. Subsequent versions were the TRF414, the TRF414X and, most recently, the 414M. During four years of testing and R&D, Tamiya engineers have continued to refine the machine, and the latest version is the TRF414MII; this is the car that recently earned the title of IFMAR world champion!



THERE'S NOTHING I LIKE
MORE THAN A REFINED,
VERSATILE RACING MACHINE.
THE LATEST VERSION OF
TAMIYA'S 414 IS JUST
SUCH A MACHINE.

The rear features a high-quality ball differential with Delrin outdrives (note the reinforcing rings). The car is fitted with Tamiya's super-smooth threaded alloy shocks, CV drive shafts and molded-graphite suspension arms.

The lower suspension-arm mounts are separate from the bulkheads and allow infinite roll-center adjustments.



DATA CENTER

VEHICLE TYPE Belt-drive
1/10-scale competition touring car

BEST BUYER Experienced racer

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Good

Parts fit and finish Excellent

Durability Good

Overall performance Excellent

SPECIFICATIONS

MANUFACTURER Tamiya

MODEL TRF414MII

DISTRIBUTED BY Tamiya USA

SCALE 1/10

PRICE \$425

(Price varies with dealer)

DIMENSIONS

Wheelbase 10.24 in. (260mm)

Width 7.44 in. (189mm)

WEIGHT

Total, as tested 52.5 oz. (1,488g)

CHASSIS

Type Double-deck plate

Material 2mm woven-graphite plate with alloy bulkheads

DRIVE TRAIN

Type Dual belt

Primary 30T pinion/128T spur

Transmission ratio 15T/32T pulleys; 2.13:1

Final drive ratio, as tested 9.10:1

Drive shafts Constant Velocity

Differentials (F/R) Ball type with Delrin outdrives/center and front one-ways

Bearing type Metal-shielded

SUSPENSION

Type Molded-graphite lower H-arms with steel turnbuckle camber upper links

Shocks Threaded aluminum body with Teflon shaft guides and bladder seal

WHEELS

Type Tamiya medium-narrow blue, dish wheels with zero offset

TIRES

Type Sorex 36R competition belted rubber

KIT FEATURES

CHASSIS. The MII includes a woven-graphite, double-deck chassis, and both decks are 2mm thick. It forms a very solid backbone once all the components have been assembled. The lower plate supports two battery configurations: stick and saddle pack. In the U.S., it seems odd to accommodate stick packs for a high-end race car, but RC racing rules in Japan require a stick pack.

Signature blue-anodized aluminum bulkheads connect the chassis plates. The blue hardware is available only on the MII; it's also a visible characteristic that distinguishes the M from the MII.

DRIVE TRAIN. The 414MII's drive train is all business; it was designed for racing—nothing but racing. The spur gear is sandwiched between a blue-anodized hub and a graphite plate, and that helps keep the gear running straight. Three spur gears are included in the kit: 112-, 120- and 128-tooth.

The spur gear is attached to the upper shaft, which has a solidly mounted pulley that drives the rear belt and a one-way pulley for the front belt. A solid front drive pulley isn't included, but a flat has been ground into the layshaft for an optional pulley that could be mounted in place of the front layshaft one-way.

A well-made ball differential with an assembled, high-quality thrust washer, indexed diff rings and lightweight Delrin outdrives with retainer rings is installed in the rear. The front of the car is equipped with one-way bearings, and that makes the MII a double one-way rig right out of the box.

Constant Velocity (CV) drive shafts connect the diffs to the axles. Each is fitted with an aluminum 12mm hex hub, and steel pins held in place with O-ring retainers index the nice-looking hubs to the CV drive shafts.

SUSPENSION AND STEERING. As with its predecessors, the MII's suspension comprises molded lower H-arms with adjustable upper links; however, the arms are molded from a very rigid graphite composite, and that is a dramatic departure from the more flexible materials typically used in Tamiya kits.

Each arm has adjustable down-travel, but the shocks are the only up-



The MII layshaft features a solid aluminum hub to which the spur gear is attached and a one-way bearing in the pulley that drives the front belt. This layout works with the front one-way to minimize drive-train drag during deceleration, and it lets the car carry maximum speed through the corners.

travel limiters. The suspension arms are affixed to the chassis with aluminum mounts that are separate from the bulkheads. This allows a very wide range of roll-center, anti-squat and anti-dive adjustments, all of which the world champ used to his advantage to win the most coveted title.

Two of the six included sway-bars are installed—one at each end of the car. Steel turnbuckle upper links are found at each corner; I'm glad that turnbuckles are included, but I would prefer them to be titanium. Each graphite shock tower has six camber-link mounting positions, but Tamiya extended

YOU'LL NEED

- 540-size stock or modified motor
- Sub-C NIMH or Ni-Cd batteries (stick or saddle pack)
- Transmitter and receiver
- A compact competition ESC
- Steering servo
- Wheels and tires
- 190mm body
- Battery charger

The 414MII is very versatile with respect to the available suspension tuning options, and this capability was well exploited by Surikarn Chaidajuriya to earn the title of World Champion. You can't earn that title just with a good car; you also have to be a great driver. But there's some genius in the world champ's setup that helped him to the checkered flag.

The instructions call for 0.7mm spacers to be installed under the forward suspension-arm blocks at the front and rear. This gives the rear a little anti-squat and the front a little kick-up for handling the bumps better, but the champ's setup is considerably different.

ROLL CENTER. Surikarn added fairly thick spacers under all four suspension arm blocks, and that lowered the chassis as well as the chassis' roll center. Why didn't he just adjust spring preload to drop the chassis? Well, that wouldn't create the ideal suspension geometry. It would lower the chassis, but it would also create a condition in which the suspension is in a "compressed" state. With that setup, the angle of the suspension arms and upper links would be such that very heavy springs and shock oil would be needed to counter the "rolling" effects, or weight transfer, in the corners. Using thick spacers lowers the chassis without disturbing the suspension geometry. In other words, the chassis is closer to the ground, but the suspension arms still sit level. This allows the use of softer shock oil and springs, so the suspension can really do its job.

REAR ANTI-SQUAT. There's a 1.5mm difference between the spacers under the forward rear suspension-arm blocks and those under the rearward rear suspension-arm blocks. He used 7mm spacers in the front, but only 5.5mm spacers in the rear. This angles the arms upward in the front (of the rear suspension), and creates anti-squat; that's the name for the geometry that resists the "squatting" effect that occurs in the rear of the car during hard acceleration. The stock setup calls for a 0.7mm difference between the forward rear and rearward rear suspension-arm blocks. Surikarn has a 1.5mm difference—double the anti-squat.

WORLD CHAMP'S SETUP

FRONT ANTI-DIVE. I mentioned before that the instructions recommend that 0.7mm spacers be installed underneath the forward block of the front suspension-arm blocks. This angles the front suspension arms slightly upward, and that helps to

absorb the bumps. Surikarn, in his setup wisdom, decided the track was smooth enough to try something different—to angle the suspension arms down in the front, also known as anti-dive. He used 4mm spacers under the forward front suspension mount.

In addition to increasing the spacer thickness beyond that recommended, he chose to install spacers under the rearward front suspension-arm block 1mm taller than those in the front—5mm. That slight difference is enough to angle the front arms down and prevent the front suspension from compressing or "diving" when braking. It's a little unconventional, but only because most cars don't have this type of adjustability. Surikarn correctly took advantage of the setup options available to him.

SHOCK SPRINGS AND OIL. The changes made to the suspension geometry meant the champ had more options to set up the shocks; the spacers under the suspension mounts and lower roll center meant that he could use lighter springs and shock oil. He actually used very light springs: 5-coil springs (blue) made of 1.3mm wire. He also used 600WT shock oil, which is 60WT by U.S. standards. This combination really allows the suspension to be ultra-responsive and able to absorb light bumps; excellent traction is the result.

FRONT ANTI-ROLL BAR. The front anti-roll bar setup is a matter of necessity. Adding thick spacers under the front suspension-arm blocks requires the moving of the stock anti-roll bar mounts from their original positions on the bulkheads. Surikarn simply used a rear anti-roll bar and longer links to attach the bar to the front suspension arms, and then he attached the longer swaybar to the upper deck. He installed the anti-roll bar mounts in place of the radius links, and that might have compromised the suspension to some degree, but only the champ knows whether the gains outweighed the losses in that situation.

the inside of the upper links to the aluminum bulkheads instead.

Damping is handled by exceptional threaded aluminum shocks. The damping action is very smooth and seamless. An unidentified shock oil is included, but I tossed it in favor of Trinity 60WT silicone fluid.

Yellow 1.5mm, 6-coil springs come with the kit; they are relatively firm and appropriate for the stock suspension setup, but I installed softer, blue 1.3mm, 5-coil springs to try and match the world champ's setup (see "World champ's setup" for more details).

THE RIGHT STUFF

The electronics used in the test car are the same as those that powered the world champion's car. It's no surprise that a Futaba radio is used at the highest level of competition, but we think it's a first for a Futaba ESC, and this new, low-profile S9550 servo just became available before it scored the ultimate win. The MC800 is Futaba's newest and best ever competition ESC, and the S9550 is among the first digital low-profile servos to have specs that rival those of full-size servos.



The front suspension features radius arms for extra hub-carrier support. Without a radius arm, the lower suspension arm and hinge pin would have to support the whole hub carrier, and it would certainly flex under normal racing loads. The addition of the radius arms makes the front suspension rock-solid.

The front suspension features the typical lower arm with upper link configuration that you'll find on most cars, but the MII also includes radius arms. These arms (or links) are attached to the hub carriers, and they are angled back toward the upper deck to form an upper A-arm of sorts that is incredibly solid. Adding the radius arms ensures that the front suspension will maintain its caster angle regardless of cornering forces.

BODY, WHEELS AND TIRES. The MII doesn't include these; as with any other race car, you choose. I selected the same body style the champ used: a Protoform 190mm Dodge Stratus. Adam Epp took care of the painting chores.

The wheels and tires are Tamiya zero-offset 24mm hoops (with Sorex inserts) and 36R tires. They are not the spec tires used at the Worlds, but it's a good combination for a prepared asphalt track. The kit includes white wheels, but I installed Tamiya's blue versions, as used by the champ.



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Futaba electronics

Well known for its high-quality radios (such as the 3PJS used in the 414MII), Futaba is also famous in racing circles for its top-notch servos. The compact, light, low-profile, digital S9550 is Futaba's latest racing servo, and it has very strong performance numbers. The other great news is Futaba's new, MC800C competition ESC. It's very compact and can handle even the strongest racing motor.



Additional items used to complete the TRF414MII

Reedy Ti 8-turn double modified motor

Reedy Extreme Sanyo RC3000-HV NiMH

Tamiya blue dish wheels; zero offset

Sorex 36R belted rubber racing tires

Robinson Racing 30T, 64-pitch pinion gear

Protoform 190mm Dodge Stratus body

PERFORMANCE



IT HAS ALL THE INGREDIENTS NEEDED TO WIN ON JUST ABOUT ANY TRACK.

I'm a racing buff through and through. I like different disciplines, of course, but there's nothing I like more than a refined, versatile racing machine. The latest version of Tamiya's 414 is just such a machine.

In our area, clubs and hobby shops tend to use as much of the available real estate for the track as they can so there are few flowing corners or spaces between lanes. Sure, there's an occasional sweeping corner and a keyhole turn here and there, but most corners are rather tight, and the lanes are typically separated only by the width of a 2x4.

I found that the MII handles as well as any car I've driven under these circumstances, but the front and center one-ways narrow the line leading into, and exiting, the corners. To maintain corner speed, you must come in wide and exit wide, especially in the 180-degree corners. The rear-wheel-only braking that results from the use of one-ways in the front can make hard braking a little more "exciting." Consequently, for tracks like the ones I race on, the best setup is to install a solid front drive pulley on the center layshaft and a front ball diff. This lets you brake later and harder, and that is well suited to tracks with a lot of tight turns—especially ones with fast sections that lead into those turns.

Power isn't an issue with my test setup. I used the same motor and batteries as the world champ did, so there's no lack of power. I installed the same wind Reedy 8x2 Ti (titanium) motor and Reedy Extreme Sanyo RC3000-HV NiMH battery as the champ's; I also used the same 30T pinion and 128T spur-gear setup as he did. The only thing I didn't match in my power-train setup was the big capacitor on the speed control, but that's coming soon, too.

I could talk all day about my experiences with the car; in short, I think it has all the ingredients needed to win on just about any track. As luck would have it, my words and experiences are almost irrelevant because this is the reigning IFMAR ISTC world champion car. It dominated in a race against the best competition in the world and in a racing format that all but eliminates the possibility of luck.

THE VERDICT

The TRF414MII is every bit a race car, a competition touring car of such high quality and design that it has quickly earned the title of world champion.

It drives well out of the box, but more important, it's very adjustable. Its features make it versatile and adaptable to a variety of track conditions, and the range of tracks to which it's suited becomes even greater if you add a solid front drive pulley and front diff. Even if you run it stock, I bet you can get around just about any track with the best of them when you drive Tamiya's 414MII.

LIKES

- Excellent parts fit and finish.
- Very versatile suspension.
- It's the world champion.

DISLIKES

- Not much space on the chassis for electronics.
- Need to grind battery slots for use of saddle packs.
- Steel turnbuckle links.

SOURCE GUIDE

FUTABA distributed by Great Planes Model Distributors (800) 637-7660; futaba-rc.com.

PROTOFORM distributed by Pro-Line (909) 849-9781; pro-lineracing.com.

REEDY MODIFIEDS a division of Team Associated (714) 850-9342; teamassociated.com.

ROBINSON RACING (209) 966-2465; robinsonracing.com.

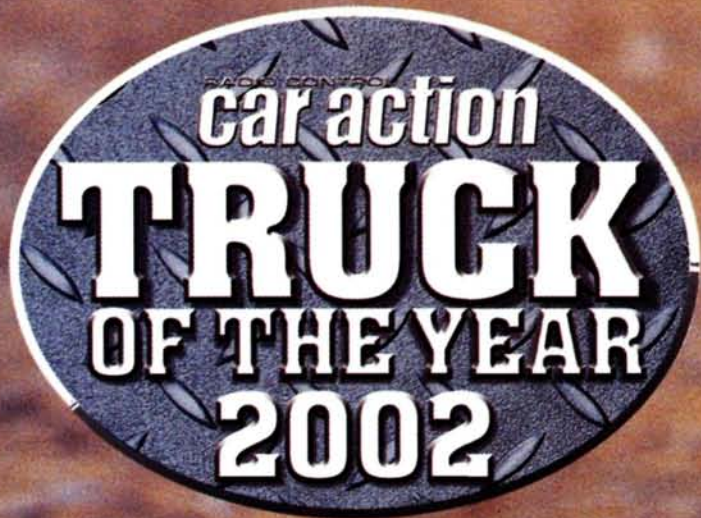
TAMIYA AMERICA INC. (800) 826-4922; tamiya.com.

TEAM SOREX USA (916) 783-8864; teamsorexusa.com.

THE COMPETITION

	CHASSIS	DRIVE TRAIN	SHOCKS	DIFFERENTIALS	AXLES	WHEELS & TIRES	BODY	PRICE	REVIEWED
Associated Factory Team TC3	Molded semi-tub	Shaft	Aluminum threaded-body	Ball	MIP CVD	Not included	Not included	\$300	12/01*
MRC Academy STR-4 Pro	Graphite plate	Shaft	Aluminum threaded-body	Ball	Universal	Belted slick	Not included	\$220	12/01*
Tamiya TB TRF414MII	Graphite plate	Dual-belt	Aluminum threaded-body	One-way/ball	CV-type	Not included	Not included	\$419	9/02
Team Losi Triple-XS	Molded semi-tub	Single-belt	Aluminum	Ball	Universal	Belted tread	Losi Stratus type	\$220	12/01*
XRAY T1	Graphite plate	Dual-belt	Plastic threaded-body	Ball	Universal	Belted slick	Not included	\$325	12/01*

Partial listing; category is too large to include all vehicles. Prices varies with dealer. *Pro Touring Car Smackdown.



TEAM LOSI
TRIPLE-XI

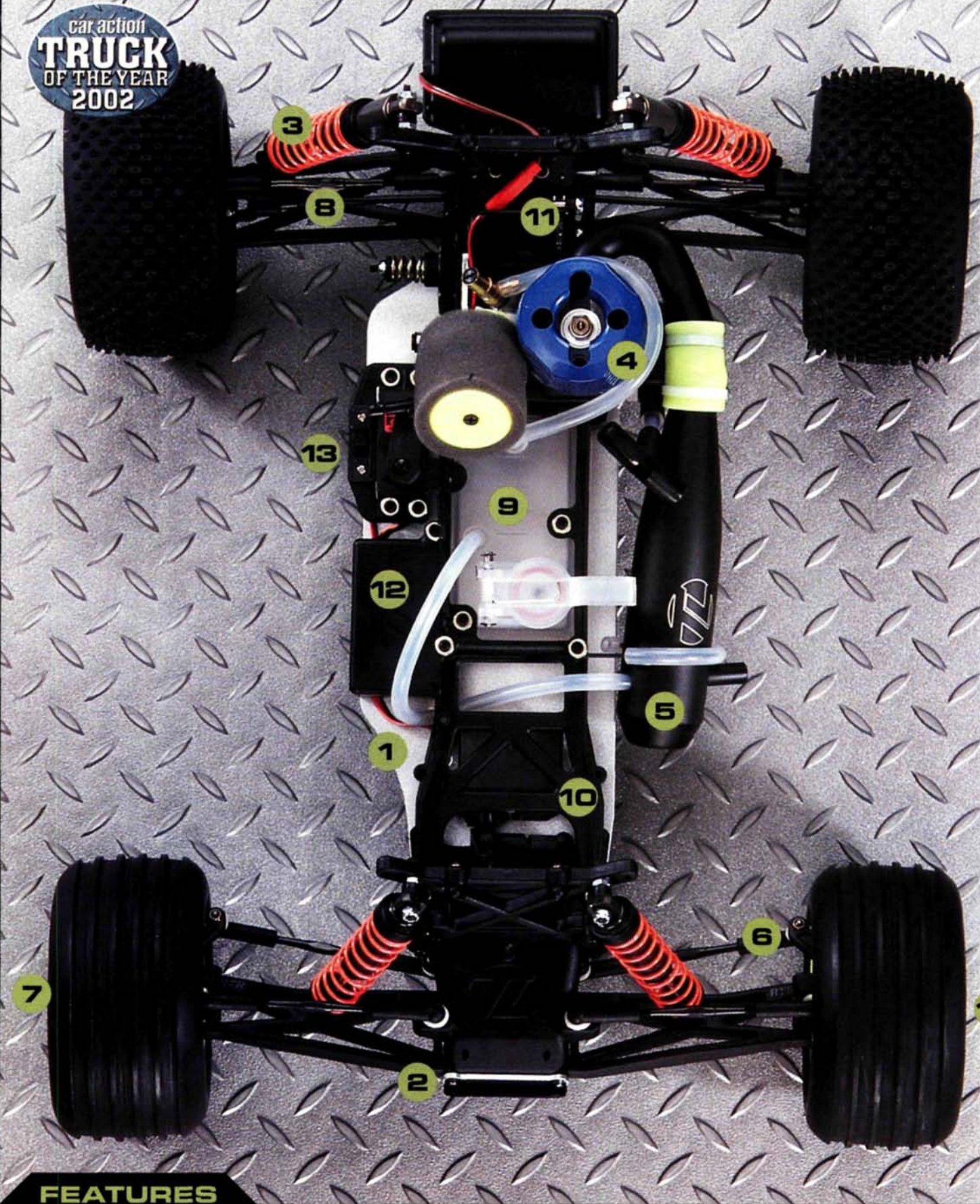
by the Radio Control Car Action team

We revealed the 2002 *Radio Control Car Action* Car of the Year in last month's issue, and now it's time to unveil the 2002 Truck of the Year. There were strong contenders from all truck categories, but our final pick was unanimous at the first show of hands. The winner? Team Losi's Triple-XNT Sport RTR—simply the best ready-to-run nitro stadium machine we've ever tested. Need more explanation than that? Here you go



IT SPORT

car action
TRUCK
 OF THE YEAR
 2002



FEATURES

- | | | |
|---|---|---|
| 1 1/8-inch (3.2mm) aluminum chassis | 6 Steel turnbuckles | 11 4.11:1 transmission with oversize ball differential and dual-disc slipper clutch |
| 2 Triple-XT front suspension | 7 Full ball bearings | 12 Enclosed receiver and receiver battery |
| 3 Hard-anodized shocks | 8 Universal-joint drive axles | 13 JR Racing XR2 AM computer radio with Z270 servos |
| 4 Mach .15 pull-start engine with dual-needle carb and heat-sink head | 9 Center-mounted 75cc fuel tank | 14 Dish wheels and soft rubber tires with foam inserts |
| 5 Aluminum tuned pipe and manifold | 10 Zero bump-steer AGD (Advanced Geometry Design) steering system | |



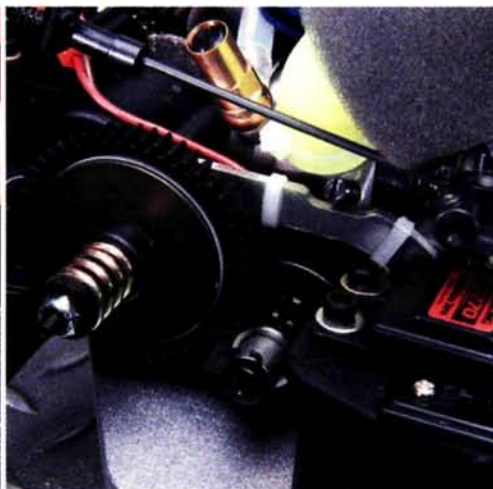
WHY IT WON

All it takes is a quick look at the Triple-XNT Sport's specs to realize that Team Losi decided "RTR" did not have to be synonymous with "entry-level." All of the XNT's essential racing features return with the RTR version; from its 3.2mm chassis and nitro-specific 4.11:1-ratio transmission to its hard-anodized shocks and Triple-XT-series suspension geometry, the Sport is a thoroughbred race truck that happens to be ready to run. Team Losi also went first-class in the radio department by spec'ing a fully adjustable JR Racing XR2 computer radio instead of a no-frills model, and it didn't skimp on the engine, either: the included Mach .15 pull-start powerplant has a fully adjustable 2-needle carburetor and enough torque and rpm to satisfy even the most experienced nitro truck guys. If you need proof, consider the Sport's 38mph top speed. That's power.

The Sport's high performance is what makes it exciting, but its "RTR" features are part of the Truck of the Year mix, too. We appreciate the truck's well-glued tires and its fully trimmed, attractively painted (not printed)

clear-window body (available in three color schemes, no less). Factory-cut decals are also a plus. Losi lets you choose where to put them, but you can leave the scissors in the kitchen drawer; just peel and stick. Chassis assembly is first-rate, too; paying close attention to the details; Losi even installed a throttle-return spring.

The Triple-XNT Sport is well equipped and well-built, easy to operate for beginners yet capable of out-of-the-box performance that rivals race-prepped machines. Sounds like a Truck of the Year to us.





NITRO ROOTS

The Sport RTR isn't the first Team Losi nitro truck to win the coveted *RC Car Action* Truck of the Year award. And it isn't that company's first RTR truck. Its nitro racing truck debut was with the NXT, which won our award in 1999. The NXT was based on the electric-powered Double-XT that dominated electric truck racing at that time. Following the successful release of the Triple-XT, Team Losi decided it was time to produce an all-new nitro platform based on the national championship-winning electric truck: enter the Triple-XNT.

The Triple-XNT "bench-built" RTR truck has the distinction of being the first Team Losi RTR. It wasn't your typical sport-level RTR, though. It was assembled in limited numbers by Team Losi's star drivers, including Adam Drake, Greg Hodapp and Todd Hodge.

The trucks also came equipped with JR XR-3 FM computer radio systems, Z-550 premium race servos and Picco .12 RC Speed engines—a nice package indeed, but not exactly affordable.

Now, the Sport chassis' performance nearly equals that of the bench-built RTRs, and thanks to its larger displacement .15 engine, it can go fender-to-fender against the bench-built trucks.



CAR ACTION TALKS WITH GIL LOSI JR.

RC Car Action: Your father once said that Team Losi would never mass-produce an RTR vehicle because the company has a reputation for manufacturing high-quality racing vehicles. Why the sudden change of heart?

Gil Losi Jr.: Before we joined forces with Horizon Hobby, we just wanted to concentrate on racing products because that is what we love to do. Now, with the resources we have available with Horizon and its partners like JR Radio, it's a lot easier to undertake a project like the Triple-XNT Sport RTR and build it to our rigorous standards.



raise the bar for ready-to-run products as we have done with our racing products. But make no mistake, our engineering focus is on racing, and, coincidentally, the RTRs benefit from this.

RCCA: What were some of the design and manufacturing goals you set for the Sport before going into production?

GL: Our main focus was to find ways to bring the experience of owning a Team Losi race truck to people who would ordinarily have to settle for a lesser vehicle because of time or price constraints.

RCCA: Was the decision to go up-market with a computer radio an easy call to make, or were there concerns about the truck's cost?

GL: Again, I have to stress the importance of having Horizon as our partner because it already had quality suppliers. This made it

easy for us to use an engine and radio that are top quality for a complete package that has no weak link.

RCCA: The Sport feels dialed out of the box, so many will show up at tracks. With this in mind, do you have any Sport RTR success stories to share with our readers?

GL: At tracks, I've often seen customers of various abilities and experience race their NT Sports with success. The most gratifying thing is that, win or lose, I've noticed that our customers are having a good time with a truck that is competitive, and they seem proud of their performance.

RCCA: Does this mean that we can expect to see more RTR Team Losi vehicles in the near future?

GL: The market has shown a tremendous demand for items such as the Triple-XNT Sport, so we will continue to do our best to

SOURCE GUIDE

TEAM LOSI
Distributed by Horizon Hobby; teamlosi.com.
HORIZON HOBBY
(217) 352-1913; horizonhobby.com.

SPONSORED BY

KYOSHO
THE FINEST RADIO CONTROL MODELS

BY GREG VOGEL & PETER VIEIRA

Greg Degani Joins Team Sidewinder

Kyosho's Greg Degani has signed up to use Sidewinder fuels and is probably already a favorite over at Sidewinder's headquarters; he won the Pro-Line Nitro

Challenge 1/8-scale Buggy class in his first outing with the snake stuff! Look for Greg spouting praise for Sidewinder in an ad near you.



Great Dane

Meanwhile, across the Atlantic ... in his nitro racing debut, top Euro driver Jonas Kaerup won the Danish Nitro Touring Car Nationals with his Team Orion Wasp .12-powered Associated Nitro TC3. "Both engine and car performed flawlessly in the 30-minute A-main," writes Orion's Philippe Neidhart in his emailed press release. (How else would we know who won the Danish Nitro Touring Car Nationals?)

SITE SEEING



Fastener-express.com

The local industrial supply store is where we score our stainless screws, but we have to order in quantities of 100; that's lame. We recently discovered the RC-savvy fastener-express.com, where you can buy in quantities of 25, and you'll find anodized-aluminum hardware as well as stainless steel in metric and non-metric sizes. They also have hardware assortments and vehicle-specific hardware kits. Nice.

BOARD WALK

FROM THE
RADIOCONTROLZONE
.COM BULLETIN BOARD

Help! Pipe problems

BEAUWOZ: The pressure fitting came loose, so I had to remount it. What should I do to plug the old hole?

RUSTLER DUDE: Plug it up with JB Weld; it will hold great.

ZOOTALAWS: What is this JB Weld we hear so much about? I have asked at my auto store and the local DIY store, but I don't think it finds its way to the UK. Zootalaws: To all us colonials, I just researched the stuff: it is the same as Araldite—two-part epoxy. I already have it in my toolbox and it gets regular use.

Number of cuts on a P2k armature?

CANUCKSK: How many cuts can I get out of a new P2k's comm? Apparently, I must not go below 0.270 inch. So if I just skim the surface with each cut, how many cuts will this be?

EXTERMINATOR: There is no way to really tell how many cuts that would be. The only way to know is to measure after each cut to make sure you stay over 0.270. It might also be a good idea to measure the top and bottom end of the comm to make sure the lathe is cutting straight and not putting a taper on the comm.

Cool names

TADIUMS4: Post some names that would be cool for RC cars. I thought up these: HardMaxx, Wildstar, Dragonstar, RPX. Post some original ones, names that were cool, or names that were uncool.

NUTTER: Nutter, of course or Nutty, Nuts ... RPX though? What's that from?

BE HEARD!
LOG ON TO
RADIOCONTROLZONE.COM

Jukka Steenari Joins Losi R&D

Shortly before heading to South Africa to win his second consecutive IFMAR 4WD Off-Road World Champion title, Team

Losi's Jukka Steenari made the leap from factory pilot to full-time staffer. Jukka is a native of Helsinki, Finland, where he earned a master's degree in mechanical engineering and manufacturing from Helsinki University of Technology. In addition to book learnin', Jukka brings 15 years of racing experience (including eight European championships) to the Losi brain trust. And it looks as if he scammed a free T-shirt out of the deal! The Steenari family includes his wife, Maikku, who is studying to be a pediatrician, and 7-month-old son Joel. Not bad for a guy who's only 25.



Here, Jukka (pronounced "yooka") kicks back with a Double-X4 and his Mitutoyos, cruisin' the Web. They pay him for this.

2002 SOUTHERN OVAL CHAMPS WINNERS

So, oval racing is big in the South. Who knew? Congrats to all the winners, and we dare you to read these names without getting Neil Young's "Southern Man" stuck in your head.

Check out snowbird nationals.com/university for pictures of these guys and more oval stuff!

Mike Boylan won Pro Mod and also appears to have won some type of bet at the post-race get-together. Party on, Mike!



CLASS	LAPS	TIME	DRIVER
Pro Stock	36	4:03	Doug Pray
Unlimited Stock	37	4:00	Jim Smith
High-Voltage Stock	42	4:01	Curtis Hamlin Jr. (TQ)
1/12 Mod	51	4:00	John Moukie (TQ)
Sportsman Mod	40	4:00	Alex Abelson
Pro Mod	44	4:04	Mike Boylan (TQ)

RUMOR MILL

■ **TRAVELIN' TRAVIS** Actually, this one's a bona-fide fact: Travis Amezcua has parted ways with Team Losi and is now running for Team Associated with Reedy power. ■ **GREEN LIGHT FOR TRIPLE-X4?** Hey, we're only saying what you're already thinking: Matt's Worlds TQ prototype looks mighty factory to us, but Losi ain't talkin'. ■ **NEW NOVAK SPOTTED AT REEDY RACE ...** and that's just about all we know; the shrink-wrapped prototype was kept under wraps between rounds.

SPEED SHOP



OFNA 1/4-inch drive Tool Set

OFNA's nine-piece 1/4-inch drive set includes flat-head and no. 2 Phillips screwdriver bits, 4.5, 5.5 and 7mm nut driver bits and 1.5, 2, 2.5 and 3mm hex wrench bits. The bits snap into a lightweight aluminum handle with a silicone grip, and all the pieces are stowed in a foam-lined plastic case. 9PC Tool kit—10823; \$39.95. OFNA Racing (949) 586-2910; ofna.com.

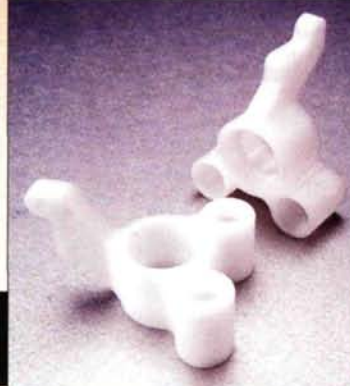


TRINITY K-Factory MP7.5 parts

Trinity's K-Factory line now includes parts for the Kyosho MP 7.5; they include front and rear machined-aluminum chassis stiffeners with hardware, vented disc brakes with pad-cleaning slots, wheel hubs with left- and right-hand threads (to prevent them from loosening) and a lightweight 3-shoe clutch system with a fly-wheel, bearings, a clutch nut, springs, shoes and a clutch bell. Special wheel adapters—K8004; \$14.99/2. Hard, 3-shoe clutch set w/housing—K8011-1; \$56.99. Hardened, vented brake disc—K8012; \$22.50/2. Aluminum stiffener brackets (F/R)—K8019/K8020; \$26.99 each. Trinity Products Inc. (732) 635-1600; teamtrinity.com.

HARDCORE RACING COMPONENTS titanium screws

Hardcore can now claim to offer parts to fit every RC vehicle, since these new ti screws will fit everything! You can buy the fasteners in a variety of sizes and styles, including flat-head and cap-head, to replace just about any 4-40 and 3mm screw on your car—all in packs of eight. Titanium screws—part number varies with size and style; \$10/pack of 8. Hardcore Racing Components (661) 294-5032; racinghardcore.com.



PMP RACING low-profile rear hub carriers for MTX-2

PMP's machined-nylon hubs are direct replacements for the Mugen MTX-2's stock units. The parts have a lower profile that allows you to use any aftermarket rim without worrying about wheel clearance issues. PMP low-profile MTX-2 hubs—\$24.99. PMP Racing; distributed by R/C Madness (860) 741-6501; rcmadness.com.

GOLDEN HORIZONS V-One R 7075 chassis

This machined, countersunk and slotted chassis is extra narrow to reduce chassis scrape when cornering, and it's constructed of extra-stiff 7075 aluminum. Heat-sink engine mounts and engine-mounting hardware are also included. V-One R chassis—GH 02109; \$54.99. Golden Horizons (604) 207-2108; ghobby.com.



LOSI Aluminum CVDs

Here is an upgrade for Triple-XS racers looking for an edge by reducing rotating weight. Losi offers MIP aluminum CVDs to replace the stock steel CVDs. Everything you need to make the swap to the lightweight parts is included. Aluminum CVD kit—LOSA9929; \$33.25. Losi; distributed by Horizon Hobby Inc. (800) 338-4639; horizonhobby.com.

DYNAMITE droop gauges

Dynamite's chassis blocks are machined of aluminum billet for precision and anodized red for style. After you've parked the chassis on the blocks, use the stepped gauges to measure arm droop—precisely.



Droop gauge with blocks—DYN2528; \$23.74. Dynamite; distributed by Horizon Hobby (800) 338-4639; horizonhobby.com.



UNDER THE HOOD

Masami Hirosaka

Yokomo Prototype 1/12 scale

RACE GEAR

Radio system: KO Propo Vantage Esprit-II

Steering servo: KO Propo PDS947FET

Battery: Yokomo Sanyo 3000HV

ESC: GM Racing SX9 prototype

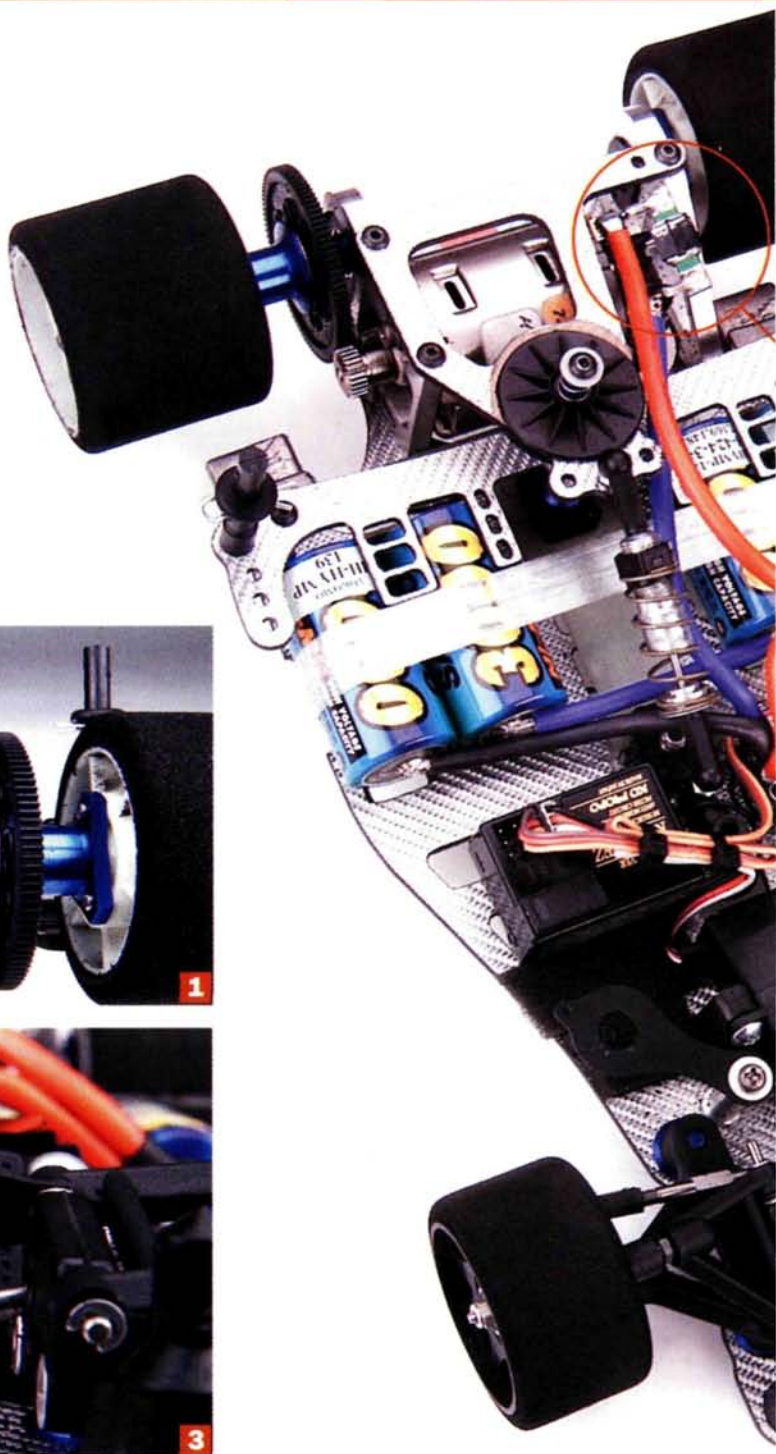
Motor: Reedy Ti 9-double

Gearing: 98/24

Tires (F/R): TRC purple/Yokomo "L"

SETUP

	FRONT	REAR
Caster	Reactive, 2 shims in rear	—
Axle position	Trailing	—
Ride height	2mm	2mm
Tire diameter	43mm	45mm
Camber (L/R)	1 degree	—
Toe-in	1 degree in	—
Springs	0.5mm	Green
Shock fluid	—	Yokomo 400



LAST LAP

Why do you race 4WD buggies? Why *don't* you race 4WD buggies? Tell us what the class has to offer, or what you think it needs.

I think more companies—like Associated—need to get into 4WD racing. I like how four-wheelers corner and get through the loose stuff better, and I'm going to buy the Losi XXX-4 when it's available.

David Carron

I would love to race 4WD buggies. They are the fastest, and easiest to control, from what I hear. I love watching them. It is amazing how much

faster they are than 2WD buggies.
Marko Meglen

I don't race them because they're too expensive, too fast and break too easily.
Mitchell Smith

4WD buggies? What year is this?
Brandon Cook

The other electric classes are well established, so if a guy is gonna race two classes, he's probably already running 2WD and truck. And if he's got a B3 and T3 or Triple-X and Triple-XT, there's a lot of parts interchangeability there. If anything, 4WD is a third class. Who has the time, money and batteries for that? I think we'd all like to try four-wheel but have too much time and money invested in a 2WD buggy and truck.
Mike Bixler

THE MASSAMI FILES



Masami wasn't available for the "5 Questions" treatment, but we do have this insightful excerpt from Team Orion's excellent online coverage of the Worlds. (You missed it? Click over to team-orion.ch/live.) Here's what Team Orion webmaster and roving reporter Henrik Carstens had to say about Masami's Yoke and the man himself.

The car is of course a Yokomo, and the most noticeable difference from the standard out-of-the-box car is the chassis; the car is basically the same but is made of a new material. The chassis is made of carbon that's coated with a silvery-looking metal; that is what makes it look quite special. When I asked Masami why he was using this new material, he said the silver color protects the carbon from UV radiation that slowly degrades carbon and makes it go soft. When asked whether his decision to use the new material might have something to do with the fact that it looks good and is very different from regular graphite, Masami smiled and agreed.

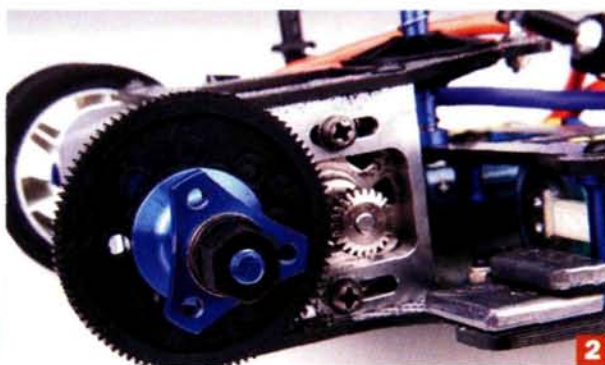
The car was powered by Sanyo 3000 cells, and with the chassis' silver-carbon coating, it looks very good. Some discussions revolved around tire choice; Masami used Yokomo L rubber tires in the rear and TRC purples up front, and he used only two full sets of tires for the race. Masami felt one of the reasons for the very low tire wear was his car's lowered rear axle. He explained that the center of gravity is very low on the rear pod, and this is what reduced his tire wear.

During the race, it seemed as if Masami was driving very tactically. From the start of round two, he was heading the field with David Spashett in second followed by Chris Tossolini, Hideo Kitazawa and Sinnosuke Adachi. It seemed as if Masami backed off the throttle to try to give David the impression that it was possible to catch him up and thus have him use more battery. From a spectator's point of view, this seemed to be the strategy, and it was awesome to see a racer being able to control the race in such a tactical way. When I asked him about this, he replied that at the 3-minute mark, he became 'a bit sleepy' and lost concentration, and he wanted to make sure that he did not make any errors, so he backed off a bit. Whether Masami was playing the master strategist or just lost concentration, his performance in the final round was impressive!



FACTORY DRIVER HOT MOD

We thought this was secret Masami stuff, but it's just a Schottky diode setup. It sure looks high-tech though.



1. Masami used Reedy power to win the 1/12-scale Worlds—again. Check out that ride height; only '64 Impalas go lower.

2. We would make fun of Masami's steel pinion, but knowing him, he used it for a reason. Tabs on the rear of the chassis seem to serve no purpose other than to hold ballast—15 grams on each side.

3. A graphite strap that's the thickness of one caster shim braces the Associated Dynamic Strut front end. Masami used the sloping, active-caster upper arm blocks and set the front end for 5 degrees of caster. When the suspension is compressed, there are about 4 degrees of caster.

NEXT MONTH'S QUESTION

Has the time come for a serious nitro monster-truck racing class? Why would—or wouldn't—such a class "work"?

Respond by clicking "Last Lap" at www.rccaraction.com.

OWN THIS CAR!

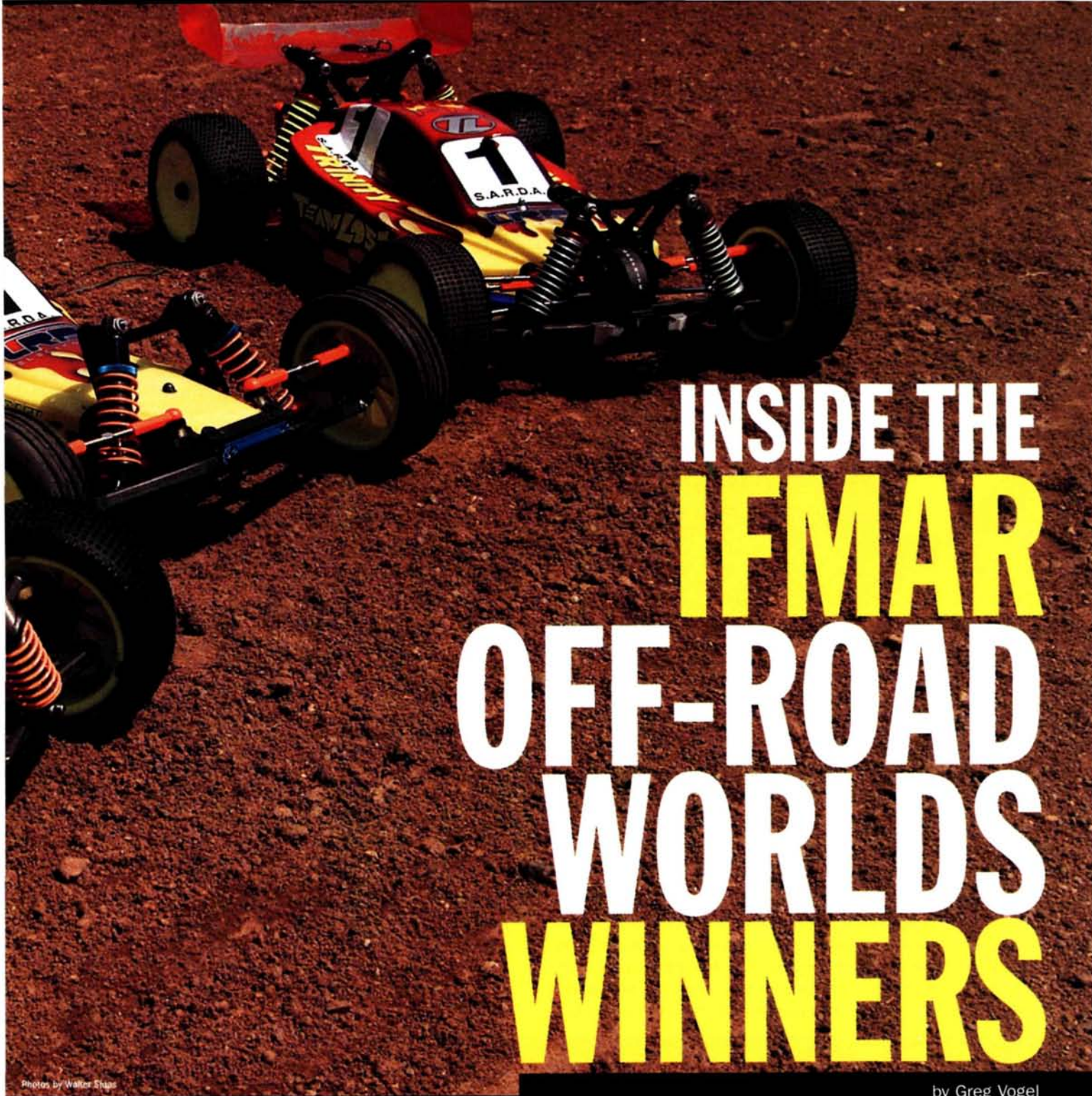
... well, not exactly this car, but a replica of its rolling chassis. Yokomo plans to bring a very limited number of Masami replicas to the United States, and yes, they will include the spacey-looking silver graphite. According to Yokomo, that shiny silvery finish actually has a purpose: it prevents UV rays from degrading the graphite. Has this been a problem in RC? When it looks this cool, who cares? ■



Jukka's and Matt's world-beating Losi

Team Losi was the team to beat at the 2002 IFMAR Off-Road Worlds. Its cars almost occupied the entire field in both 2WD and 4WD. The main buzz focused on Losi's new Triple-X4 buggy, which Matt Francis put on the pole for the 4WD A-main. When all three A-mains had been run, however, Jukka Steenari took the overall win with his Orion-powered Losi Double-X4. Matt wouldn't be denied a world title, though; he drove his Trinity-powered Losi Triple-X buggy to its limits to capture the 2WD World Champ title.

We snagged Jukka's and Matt's Worlds-winning cars and even Matt's TQ Prototype Triple-X4 so we'd be able to show you exactly which equipment was used to make RC history. Check out the new World Championship rides.



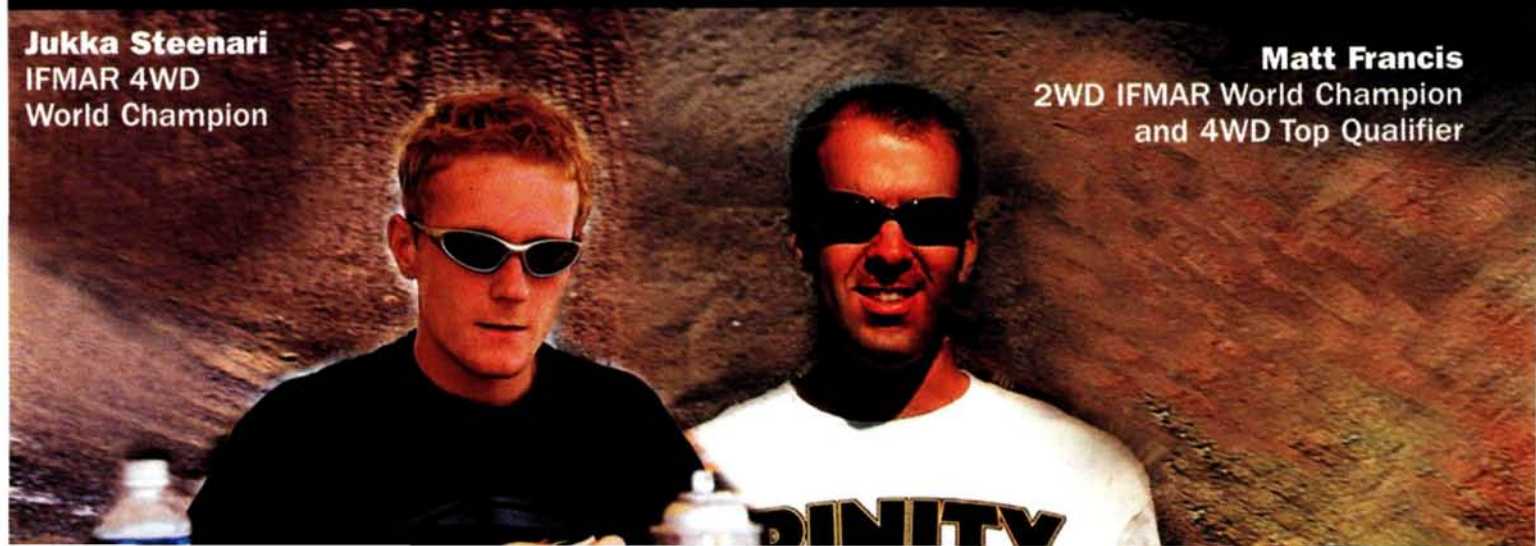
INSIDE THE IFMAR OFF-ROAD WORLDS WINNERS

Photos by Walker Sharp

by Greg Vogel

Jukka Steenari
IFMAR 4WD
World Champion

Matt Francis
2WD IFMAR World Champion
and 4WD Top Qualifier



DOUBLE-X4 BUGGY

Radio—Sanwa M-8

Receiver—Sanwa RX-211

Servo—Sanwa ERG-VR

Motor—Team Orion Core Modified 9 Quad

Battery—Team Orion Sanyo 2400

ESC—Novak Cyclone C2

Tires—handout Losi Red Blockhead fronts

Losi Red X 2000 rears

Body—stock

Mods—rear swaybar 0.055 in.



Jukka Steenari's Team Losi Double-X4 Worlds Edition

Jukka's win didn't come easy. At the start, Matt Francis took the inside line and forced Jukka to drive on the outside in the dust; this allowed several drivers to pass. For part of the way, Jukka had to battle Travis Amezcua and Todd Hodge to regain second. At the buzzer, Matt triumphed with a big lead over Jukka.

In round two of the 4WD A-main, Jukka and Travis tangled early and allowed Matt and Mark Pavidis to occupy the front positions in that order. Then they tan-

gled and let Jukka and Travis pass them and take the top two spots. Travis bobbed, and Matt pulled into second, but the buzzer caught Matt, and Jukka drove on for an extra lap and the win.

The title came down to the third A-main. Matt and Jukka took off early, but a mistake sent Matt back a few positions. Jukka drove an excellent race to win the World Championship for Team Orion and Team Losi.

**FRONT SUSPENSION**

Jukka installed two washers under the upper link to raise it to adjust roll; he also used graphite parts and threaded shocks, but the buggy is otherwise pretty much stock. Losi Blockheads were selected as the control front tires for the 4WD buggies, and Losi X 2000s were spec'd for the rear.

**REAR SUSPENSION SETUP**

Jukka's rear suspension setup: shocks in the outermost holes; spacers on the shaft to limit travel; camber links outside; and a swaybar. He also uses Trinity sleeves to prevent the outdrives from spreading when under power.

TRIPLE-X BUGGY

Radio—Airtronics M8

Receiver—LRP Phaser

Servo—Airtronics 94452

Motor—Trinity P-94 11-double

Battery—Trinity VIS Panasonic Stock
Metal Hydride

ESC—LRP Quantum

Tires—handout

Body—stock

Mods—all Trinity Team Kinwald and
Matt Francis RC aluminum bulkheads
and accessories**SWAYBAR SETUP**

For the smooth, flat, South African track, Matt decided to go with a swaybar. Strapped to the chassis is a Trinity VIS-Extra pack and an LRP speed control.

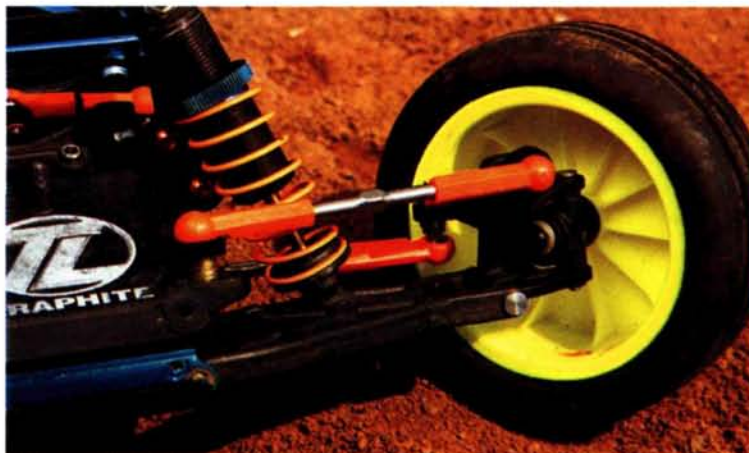
Matt Francis'

Team Losi Triple-X

Matt faced an exciting battle before he was able to capture his title. In the first A-main round, he was closely followed by Mark Pavidis and Brian Kinwald, but he held the lead from the start.

In the second round, Matt again had a chance to wrap up the title, but an accident cost him a few positions, and Neil Cragg took the win with Brian Kinwald in second. Matt made do with third, so in the third round, the title was up for grabs.

The last round was very close. Matt took the lead early but Brian and Travis were very close, and during the last half, Travis was all over Matt's motorguard. In a push for the win, he tried a last-minute heroic move over the last set of jumps. This proved to be too much of a challenge; Matt passed the line and the top spot was his.

**FRONT SUSPENSION**

It looks as if someone let Matt loose in the bin of little gold washers. Note the stack of washers under the inside camber link to alter the car's roll, and there are also a few under the steering link. For ease of tuning, the car is also equipped with threaded shocks.

**REAR SUSPENSION**

The rear-hub setup: Trinity aluminum hub carriers spaced from the center with two gold washers under the pivot balls to alter the car's roll attitude. In 2WD, Pro-Line Holedshots were chosen as control tires for the 2WD class.

STEERING ASSEMBLY

Like many parts on the car, the steering assembly was carried over from the Triple-XS. A thick fiberglass front tower supports the shocks, and if you look toward the bottom of the chassis, you'll see the custom aluminum arm mounts that support the suspension.



CHASSIS

It may look just like a Triple-XS sedan chassis, but it isn't. We put a spare XS chassis next to it and

found that its rear is slightly longer—yet another indication that Losi may soon put the car into production? Boy, we hope so.



TRIPLE-X4 PROTOTYPE

Radio—Airtronics M8

Receiver—LRP Phaser

Servo—Airtronics 94452

Motor—Trinity P-94 10 Double

Battery—Trinity VIS Panasonic Stock Metal Hydride

ESC—LRP Quantum

Tires—handout

Body—custom

Mods—the whole car!



Matt Francis' Prototype Team Losi Triple-X4

Matt's Prototype Triple-X4 was very successful; it captured the TQ position. Here's the inside of the new Losi Triple-XS-based buggy and what may be in production in the future.



FRONT SUSPENSION

Hmm These arms look as if they were made in a mold. Could this be an indication that this car may be put into production?



REAR SUSPENSION

We're used to seeing molded-composite towers on Losi vehicles; for the Prototype Triple-X4, however, Matt doubled the fiberglass towers to ensure extra damper-mount strength.

WHAT'S NEXT?

You can buy Losi's winning Double-X4 Worlds and Triple-X buggies right now, as well as their off-the-shelf electronics and Team Trinity and Orion horsepower. Could a World Championship Edition Triple-X be on the way? And what about the "Triple-X4"? We can't wait to find out what Losi does next! ■



Pro-Line

Hosted by Pro-Line and managed by the staff at The Dirt RC Park in Hemet, CA, the 2002 Pro-Line Nitro Maxx Challenge was the RC equivalent of the "X Games." Three T-Maxx classes plus a new Outlaw class for the latest

Nitro Maxx Challenge

SPONSORED BY PRO-LINE & RADIO CONTROL CAR ACTION & THE DIRT



The Dirt's expansive layout gave racers plenty of room to race, and the fastest .21-powered lap times were in the 39-second range. Most of the drivers in the small-block T-Maxx classes took 45 seconds to complete one lap. The track was packed with doubles, triples, a tabletop jump and a rhythm section. The back straightaway was more than 150 feet long and allowed the vehicles to wind out their engines. Despite the many obstacles, the track was easy to negotiate and very fast.

Traction was never a problem because a crew watered the track between heats. The two-story drivers' stand provided a great view of the layout, and the cover kept the sun out of the racers' eyes. I take my hat off to the track crew because this is one of the coolest dirt tracks I've raced on.

THE TRACK





buggy-based monster racing trucks joined the $\frac{1}{10}$ Gas Truck and $\frac{1}{8}$ Gas Buggy classes to create a nitro racing extravaganza. Along with the many pro racing teams were teams from T-Maxx aftermarket companies battling for bragging rights and trophies.

Challenge

by George M. Gonzalez



A-MAIN

• **Stock T-Maxx.** The only requirement in this 7-minute heat was that racers had to use their stock TRX Pro .15 engines and TQ Radio systems, but chassis and suspension modifications were allowed. Because the radio systems were on the 27MHz band, only six trucks raced at any one time. (As you'd expect, all the 27MHz frequency clips were absent from the frequency board during the practice rounds.)

TQ Fred Chase had his truck dialed and ended with a 10/7:16.68 final time—3 laps ahead of his nearest competitor. Joe Hegmann and Richard Smith finished in second and third, respectively, each with 7 laps. As you can tell by the 1-minute lap times, the track was enormous.

• **Modified T-Maxx.** Racers had to use .15 small-block engines and the stock or aftermarket T-Maxx differentials (buggy diffs weren't allowed). Any engine brand and all modifications were legal.

During qualifying, Team Associated/Thunder Tiger factory driver Jared Tebo was the only one to post a 9-lap run to take the TQ honors. He went on to lap the field and won the 15-minute A-main. With a JT chassis and an RB engine, his T-Maxx was stuck to the track like Shoe-Goo, and when it did crash, it always seemed to come out of it with the shiny side up. Ryan Cavalieri, (also racing a JT chassis) finished second, while Ramiro finished in third (nobody seemed to know this guy's last name).

• **Super Modified T-Maxx.** Big-block .21 engines and any chassis and suspension mods were legal, but stock differentials or aftermarket units designed for the T-Maxx were mandatory. Those who had Kyosho MP 7.5 diffs stuffed inside the diff housings were sent to the Outlaw Class.

Chris Higa and TQ Mathew Byron battled during the 15-minute Main, and Higa's Thrasher Racing T-Maxx crossed the line 6 seconds ahead of Byron's, and Jim Smalley rounded out third.

• **Outlaw.** This year saw the introduction of the Outlaw class for 1/8-scale buggy-based monster trucks and modified T-Maxx trucks with .21 engines and aftermarket chassis, suspension and drive-train components (including 1/8-scale buggy diffs). Every T-Maxx truck in this class was practically a

checking account on wheels; they had hundreds—if not thousands—of dollars' worth of aftermarket aluminum, titanium and graphite components.

Scott Hughes' JT Racing T-Maxx was clearly the most dialed, but OFNA Dominator driver Paul Coleman qualified with the same number of laps, so we were assured of a battle during the 15-minute Main. They put on quite a show for several laps, and then Hughes blew a clutch-bell bearing and was out of the race.

Gene "the machine" Hickerson took over second with his JT Racing T-Maxx and pressured Coleman all the way to the end. The dash to the finish line resulted in Coleman's keeping his pursuer at bay and crossing the line first to take the championship. Hickerson took the second-place trophy, and Robin Oury went home with third.

NITRO MAXX CONCOURS

Over 100 trucks lined up—an awesome spectacle. There were many great-looking vehicles, but Jay Ando's T-Maxx tow truck was a standout (he took the Concours trophy in 2001, too). The photo doesn't do his truck justice. The rear of the body and the tow hitch were handmade, and the truck features working lights and a complete sound package. It even has a working hitch; that's a fully equipped E-Maxx in tow!



Some complained that the truck was "over the top" and demanded that the judges make Ando drive it in accordance with ROAR concours rules—a request I thought very petty. The truck was fully functional, and Ando was willing to drive it, but there was no need to make him circle the track and risk damaging his work. Sorry guys; the track is for racing and not for proving the functionality of a concours winner.

**NEW
IN THE PITS**

Native Racing



The Native Racing machined 7075 aluminum Big Block Pro Racing Chassis is 2 ounces lighter than the stock chassis and also stronger. It has several mounting locations for the fuel tank so you can adjust weight distribution, and it's drilled to accept the company's optional Pro Starter 1100, which allows you to start non-pull-start engines mounted on the T-Maxx chassis. The Pro Racing Chassis includes all the mounting hardware you need, engine mounts and a special manifold.

The Pro Race Station LE isn't just a car stand; it's a tuning station complete with roller assembly. Roller load may be adjusted to simulate racing conditions, and according to Native Racing, the Pro Race Station will accommodate any T-Maxx—no wheelbase or width limitations.

Native Racing (407) 228-0760; remotecontrolhobby.com.

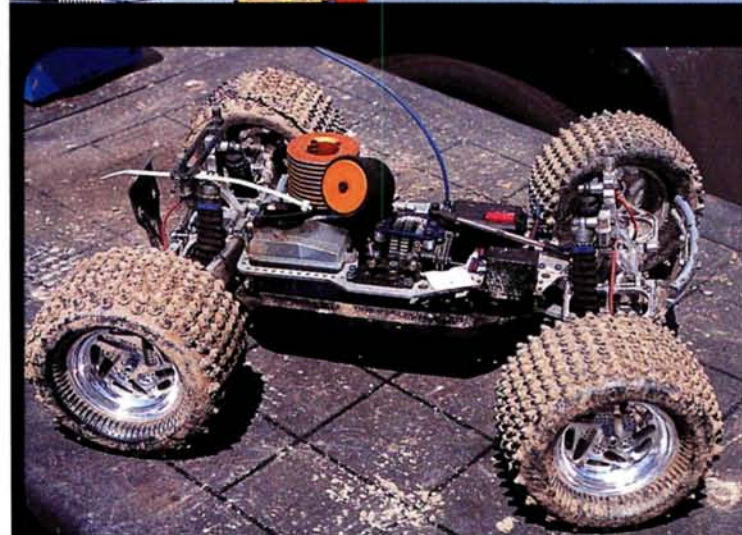
This Class 1 suspension kit for the T-Maxx and E-Maxx includes four, machined-aluminum upper and lower suspension arms, front and rear hub carriers, turnbuckles and a steering link. The components are machined of 6061 aluminum and make the truck 2 inches wider than stock using the stock universal axles. The rear hub carriers have an additional pillow ball to allow rear-toe adjustments, so there's no need for rear tie rods. Look closely and you'll see that the shocks are mounted on the upper suspension arms; according to Trophy Class RC, this increases suspension travel to 4 inches. TCRC also offers T-Maxx aluminum diff housings that allow the use of the Kyosho Inferno MP 7.5 diff. TCRC (805) 988-8949; trophyclassrc.com.

Trophy Class RC





1. Pro-Line's chief designer, Tim Clark, dropped by to race and help with track maintenance. 2. This cool-looking minibike is the perfect way to get around on the track. I bet we could make this thing RC powered; anybody have an extra high-torque servo? 3. Team Losi/Team Orion factory pilot Jimmy Babcock gave his Losi Triple-XNT a workout in the 1/10 Gas Truck class. 4. Marty Korn is a well-known talented racer, but he's also famous out West for his custom designs and painting prowess. He has painted cars for many pro drivers and show bodies for companies such as Pro-Line. 5. The OFNA racing team (left to right): Angel C., Paul Coleman, Steve Nguyen. These guys put on an impressive show. Paul won the Outlaw A-main; Steve finished in fourth with a brand-new OFNA Dominator truck; and Paul finished sixth in the 1/8 Gas Buggy with his 9.5. 6. The RC Car Action Race "team": George M. Gonzalez and Brad Hamann. Brad beat the G-Man's qualifying time by 3 seconds, but George spanked him in the Main.



Many drivers, including Scott Hughes and Ryan Cavalieri, used JT Racing's new T-Maxx Big Block Race Chassis. This eliminates the stock lower chassis braces and raises the front and rear diff housings to chassis level to provide a flat, low-CG drive train. As shown in the photo, the inline-mounted engine is on the left side of the chassis just as it would be on an 1/8-scale buggy. The complete chassis kit includes the center spool, aluminum bulkheads and diff cases. JT sells the chassis pieces separately and as a complete kit without the fuel tank and radio box (requires a Kyosho MP 7.5 fuel tank and radio box). JT Racing; distributed by Wild Hobbies (714) 335-2435.

JT Racing



Unlimited Engineering

The folks at Unlimited Engineering have given the OFNA Monster Pirate the Super Maxx treatment. A machined chassis and upper deck, race-inspired aluminum suspension components and bulletproof bulkheads and shock towers are available. The upper deck allows the fuel tank to be installed in the rear and the radio box in the front; this improves weight distribution. The parts will be available separately and as a complete conversion kit. If the MP chassis is anything like the T-Maxx chassis, this thing will be indestructible.

Unlimited Engineering; unlimitedengineering.com.



Many racers signed up for the long-jump contest, and the winner was the one who drew the loudest applause.

• **Long-jump.** The event was brought to a climactic end. A large wooden ramp was set up along the back straightaway, and a dirt landing platform was built on the other end to help cushion the landings. The event was open to all racers,

and judging was based on the volume of spectator applause. This was actually more of a freestyle contest than a long jump. Those who did the best midair stunts drew the most enthusiastic applause. The 1/8-scale buggies jumped the highest and farthest and were able to do the coolest stunts during their super-long flight times. Unfortunately, the landing platform wasn't much help, as most vehicles overshot it by more than 15 feet and some were disabled, but most survived long enough to make several jumps.

The jump that earned the loudest applause was that



With his rocket-powered T-Maxx, Kyle Pipkin from Las Vegas, NV, turned the long-jump contest into a spectacle.

of Kyle Pipkin's rocket-powered T-Maxx. This industrious (read "crazy") racer strapped on two E-class model rocket engines and rigged the ignition to the third channel switch on his TQ radio system. He planned to hit the ignition the moment the truck reached the launch ramp, but as you can see, he hit the switch prematurely, and the truck veered left and almost missed the ramp completely. Once airborne, the Rocket Maxx did three forward somersaults before re-entry and wedged itself against a chain-link fence.

WRAP-UP

The Pro-Line Nitro Maxx Challenge is a lot of fun for competitors and spectators. The action was nonstop all weekend, and the long-jump contest was the ultimate grand finale. We congratulate all the 2002 Nitro Maxx Challenge champions and pass along a big thank you to the staff at Pro-Line and The Dirt RC Park for a great track setup and smooth event management. Hope to see you all there next year. ■



STOCK T-MAXX

Fin./Qual.	Driver	Chassis	Engine	Pipe	Fuel	Radio	Tires	Body
1/1	Fred Chase	T-Maxx	TRX .15	Associated	Traxxas	Traxxas	Pro-Line	Pro-Line
2/2	Joe Hegmann	T-Maxx	TRX .15	MIP	INS	Traxxas	Pro-Line	Bolink
3/3	Richard Smith	T-Maxx	TRX .15	Traxxas	Redline	Traxxas	Pro-Line	Pro-Line

MODIFIED T-MAXX

1/1	Jared Tebo	Traxxas	RB/O'Donnell	O'Donnell	O'Donnell	Air M8	Pro-Line	Pro-Line
2/2	Ryan Cavalieri	JT Racing	Team Orion	Team Orion	Team Orion	Air M8	Pro-Line	Pro-Line
3/5	Ramiro	Thrasher	RB	Yokomo	O'Donnell	Air M8	Pro-Line	Pro-Line

SUPER MODIFIED T-MAXX

1/3	Chris Higa	Thrasher	O.S. RZ .21	Novarossi	O'Donnell	Air M8	Pro-Line	Pro-Line
2/1	Matthew Byron	Native	O.S. CVR .15	Associated	O'Donnell	JR R1	Panther	Dynamite
3/6	Jim Smalley	Native	O.S. 15 RX	Paris	JAC	Airtronics	Panther	Dynamite

OUTLAW T-MAXX

1/2	Paul Coleman	OFNA	OFNA/Pico	OFNA	O'Donnell	INS	OFNA	Pro-Line
2/3	Gene Hickerson	JT Racing	O.S.	Kyosho	Sidewinder	Hitec 3D	Pro-Line	Pro-Line
3/5	Robin Oury	Unlimited	RB	RB	Blue Thunder	Air M8	Panther	Pro-Line

1/10 GAS TRUCK

1/6	Ryan Cavalieri	Losi	Team Orion	Team Orion	Team Orion	Air M8	Losi	Losi
2/1	Jared Tebo	Associated	RB/O'Donnell	O'Donnell	O'Donnell	Air M8	Pro-Line	Pro-Line
3/4	Richard Saxton	Associated	INS	INS	O'Donnell	JR R1	Treadz	Pro-Line

1/8 GAS BUGGY

1/3	Greg Degani	Kyosho	O.S. V01	Kyosho	Sidewinder	Futaba	Treadz	Nuova Faor
2/1	Richard Saxton	Kyosho	INS	INS	O'Donnell	JR R1	Treadz	INS
3/2	Jeremy Kortz	Kyosho	INS	INS	Sidewinder	JR R1	INS	INS

INS = Information not supplied

PRO-LINE & RC CAR ACTION PRESENT THE ...

CACTUS CLASSIC

by George M. Gonzalez

Every spring, hundreds of diehard electric off-road racers head to Scottsdale, AZ, for the Pro-Line and RC Car Action Cactus Classic. Scottsdale RC Raceway is well-known for its challenging track layouts, but it's the staff and their excellent customer service who bring people back year after year. Now in its 16th consecutive year, the Cactus Classic is bigger than ever, and 2002 showed a record attendance. Here's how it all went down.



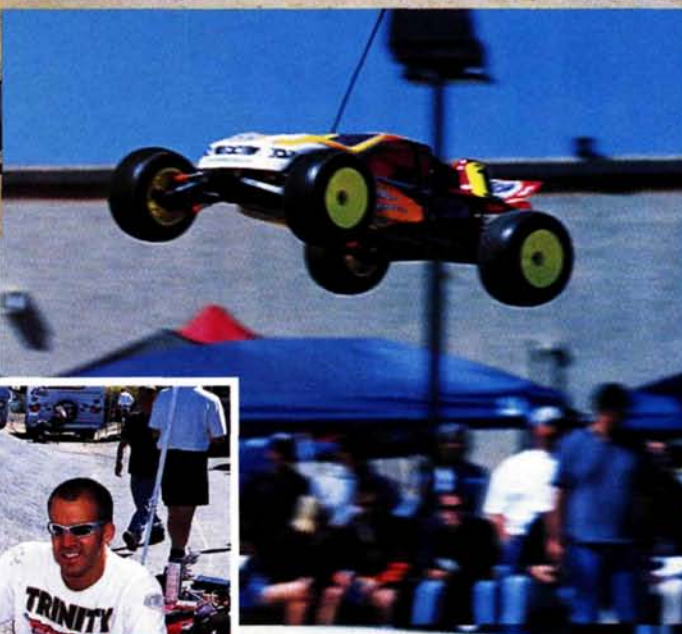
A Clean Sweep for Team Los



Here's Matt Francis accepting his Mod-class award (above), and here's Matt giving a couple of kids the low-down on how he scored her phone number (below).



Photos by George M. Gonzalez



FAST FACTS

- The Cactus Classic is hosted by Scottsdale RC Raceway and is held during the local colleges' spring break, and that means that nightlife during the race weekend is action-packed.
- More than 400 racers competed in eight classes.
- A Team Losi vehicle earned the top two spots in every class.
- A member of the Maifield family has won the RC Car Action Concours Cup three years in a row.
- Matt Francis had back-to-back wins in 2WD and Truck Modified.
- Scottsdale RC Raceway store manger Scott Anfinson is the best race director/announcer in the business!



click trip 
RCCARACTION.COM

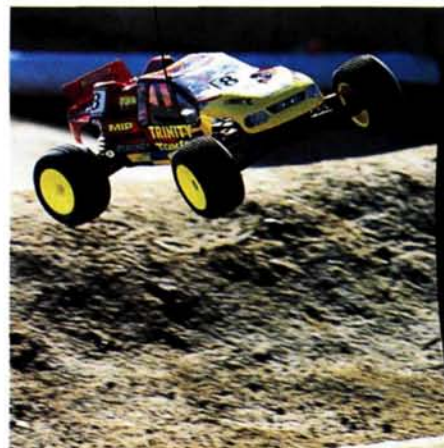
FOR MORE CACTUS
CLASSIC PHOTOS
AND A COMPLETE
WINNERS' CHART



Christian Carr, 9 years old, was the youngest driver at the Cactus Classic; Garry Bennett was the oldest driver, but we won't mention his age.



Shawn "Tiny" Alcorn bought his gas-powered blender to the event; anyone want a smoothie?



CONCOURS



The RC Car Action Concours Cup winners (left to right): Ron Reid, third; Perry Maifield, first; Skyler Gal, second. Great job, guys!



Look closely; there's a live tarantula inside the cockpit of Skyler Gal's second-place concours winner.



Perry Maifield's patriotic concours winner features a dramatic NYC skyline.



1. Kyle Schmitz's Stock Truck class-winning Losi Triple-XT. 2. Billy Fischer's 2WD Expert Stock class-winning Losi Triple-X completes the Team Losi sweep!
3. Here's a good look at Matt Francis' Truck Mod class-winning Triple-XT. 4. Team Trinity factory driver Matt Francis' 2WD Mod-winning Triple-X. This car was fast!
5. Michael Cometti's 2WD Stock class-winning Losi Triple-X. A Peak Power Flo battery pack and Trinity P2k2 stock motor got this buggy across the finish line first!

2WD STOCK

FIN./QUAL.	DRIVER	CHASSIS	BATTERY	MOTOR	ESC	TIRES	BODY
1/2	Michael Cometti	Losi Triple-X	Peak	Trinity P2k2	Novak	Losi	Pro-Line
2/4	Adrian Redding	Losi Triple-X	Nuclear Power	INS	Novak C2	Losi	INS
3/1	Chris Wilde	Losi Triple-X	Pro-Match	Trinity P2k2	LRP 7.1	Losi	Losi

2WD EXPERT STOCK

1/1	Billy Fischer	Losi Triple-X	Pro-Match	Trinity P2K2	Novak C2	Losi	Losi
2/6	Doug Scripture	Losi Triple-X	Team Orion	Team Orion	LRP V6	Losi	Losi
3/2	Ryan Maifield	Associated B3	Reedy	Reedy MVP	Novak C2	Pro-Line	INS

2WD MODIFIED

1/2	Matt Francis	Losi Triple-X	Trinity SMH	Trinity P94	LRP	Losi	Losi
2/5	Brian Kinwald	Losi Triple-X	Trinity Panasonic	Trinity 12x2	Novak C2	Losi	Losi
3/3	Jim Gard	Losi Triple-X	Pro-Match	Team Orion	LRP	Losi	Losi

STOCK TRUCK

1/1	Kyle Schmitz	Losi Triple-XT	Pro-Match	Banzai	Novak	Losi	Losi
2/2	Joel Van Horn	Losi Triple-XT	K.C. Racing	K.C. Racing	Novak	INS	Losi
3/6	David Calica	Losi Triple-XT	Peak	Peak	LRP	Pro-Line	Losi

EXPERT STOCK TRUCK

1/1	Joe Pillars	Losi Triple-XT	Peak Power Flo	Peak Hellfire	LRP 7.1	Losi	INS
2/2	Billy Fischer	Losi Triple-XT	Pro-Match	Trinity P2k2	Novak C2	Losi	Losi
3/3	Charlie Perez	Associated T3	Pro-Match	Reedy MVP	Novak C2	Panther	Associated

OLD DUDE STOCK TRUCK

1/1	Frank Riley	Losi	Trinity	Trinity	Novak	Losi	Losi
2/0	Dave Rosen	Losi Triple-XT	Pro-Match	Trinity P2k2	LRP 7.1	Losi	INS
3/3	John Henry	Losi Triple-XT	Peak	Trinity P2k2	LRP	Losi	Losi

MODIFIED TRUCK

1/1	Matt Francis	Losi Triple-XT	Trinity SMH	Trinity P94	11x2LRP	Losi	Losi
2/3	Brian Kinwald	Losi Triple-XT	Trinity Panasonic	Trinity 10x2	Novak C2	Losi	Losi
3/4	Ryan Cavalieri	Losi Triple-XT	Team Orion	Team Orion 11x2	Novak	Losi	Losi

4WD MODIFIED

1/4	Travis Amezcua	Losi Double-X4	Peak Power Flo	Peak 9x2	Novak	Losi	Losi
2/1	Brian Kinwald	Losi Double-X4	Trinity Panasonic	Trinity 10x2	Novak C2	Losi	Losi
3/2	Matt Francis	Losi Double-X4	Trinity SMH	Trinity P94	LRP 10x2	Losi	Losi

INS = Information not supplied by driver



6. Travis "Peanut" Amezcua's Peak Power Flo-powered Losi Double-X4. Amezcua, Brian Kinwald and Matt Francis ended up in a three-way tie, but Amezcua had the best throw-out round.
7. Joe Pillars' Expert Stock Truck class-winning Losi Triple-XT MF Edition.
8. Frank Riley's Old Dude Stock Truck class-winning Triple-XT. ■

RTR can mean "Ready to Race"!

Everything you need to go from the backyard to the racetrack by Gary Katzer

With so many ready-to-run (RTR) cars and trucks on today's RC scene, it's easier than ever to get into the hobby. Though early RTRs emphasized low-cost and durability over performance, many of today's factory-built machines are quite raceable with a few choice modifications and the right support gear. When you've finished reading this article, you'll be prepared to redefine "RTR" as "ready to race"!

Out with the bushings, and in with the bearings!

As a cost-control measure, some RTRs have metal or plastic bushings instead of ball bearings, or they may use ball bearings in the transmission and bushings elsewhere. A complete set of bearings will extend run time and improve top speed by minimizing friction, and it will also increase precision by removing "slop" from the car's rotating parts.

So how do you know which bearings to get? Your owner's manual is the first stop; it should have a list of optional parts, and a bearing set is usually near the top of the list. If not, check the item numbers for the kit's bushings; the

bushing description should include its size, so order bearings with the same dimensions.

You'll have to disassemble your RTR to install the bearings, so keep the manual handy. If your RTR didn't include a manual that covers assembly from the ground up, and you aren't comfortable tackling the project on your own, your local hobby shop can help.



Ball bearings are a smart upgrade from plastic and bronze bushings. Bearings help eliminate the negative effects of friction, and they keep tolerances tighter than bushings do.



Step up to an ESC

More and more electric RTRs are arriving with factory-installed electronic speed controls, which are better known as ESCs. If your machine includes a rotary or wiper-type mechanical speed control (MSC), you should upgrade to an ESC if you plan to race. The number-one benefit will be the vastly superior throttle control, and that is a must for racing. You'll also get maintenance-free reliability (also important for racing) and improved efficiency for longer run times. Plus, the ESC will lighten your vehicle by allowing you to remove the throttle servo.

For as little as \$40 you can buy a good, entry-level ESC, or you could go to the other extreme and buy a top-of-the-line competition ESC that costs \$175 or more. For most club-level and parking-lot racing, a \$50 to \$90 ESC will be just fine, and a number of companies offer feature-packed ESCs within this price range. For more information and a comparison of inexpensive "speedos," check out the "Low-Buck Racing ESC Guide" in *RC Car Action's* April 2002 issue.

An ESC such as this DuraTrax IntelliSpeed transfers battery power to the motor with far greater efficiency, reliability and control than a mechanical speed control.

TOOLS MATTER!

Many kits include a few hex wrenches so that you can work on your car—at least, until the soft metal they're made of breaks or strips. High-quality RC tools make maintenance a pleasure, and there are plenty of sources: Thorp (by MIP), Trinity, RPM, Hudy, Dynamite, DuraTrax and others offer precision wrenches with hardened tips that fit fasteners snugly and last a long time. And, with the screwdriver-type handles, you won't waste time (and skin) trying to spin an unwieldy "L" wrench.



Thorp wrenches are well-known for their high-quality and precise fit.



Get the right rubber!

Most RTRs include relatively hard tires that emphasize long wear over sheer grip, and that is exactly what you need for play action. But for race duty, track-matched rubber is the only way to go. You'll also need new wheels to go with your new tires, assuming that you glued your tires to the wheels or that the manufacturer glued them for you. Selecting replacement wheels is easy enough, but choosing the right rubber can be tricky. The best bet is to simply run whatever the fast guys are running. Visit the track or parking lot where you plan to race, and talk with some of the drivers to learn what they use. You'll also be able to get some good information about tires for your vehicle from your local hobby shop.

When it comes to better handling, the correct race-quality tires can really make a difference. TRC Off Road's Magic mounted tires and Pro-Line's Holeshots are shown.

Perform a "boing-ectomy"

Most car and truck RTR kits include fluid-damped ("oil-filled") shocks, but some still use what I like to call "boingers"—better known as friction-damped shocks. The problem with this type of shock is that there is rarely enough friction to provide any real damping.

"Great, but what's damping?" you ask. Without getting into a big physics discussion, it's what prevents a car from bouncing on its springs like a pogo stick. In a fluid-filled RC shock, the damping force is created by forcing a piston through fluid, and that force can be adjusted by altering the piston's configuration or by filling the shock with more viscous or less viscous silicone fluid.

Matching the spring rate and damping to track conditions is an art, but any sort of damping will give you far superior performance than an undamped shock. Check your kit's manual for a fluid-damped shock option, or choose an aftermarket set; just be sure to get shocks that are the same length as—or a little longer than—your originals. You can install spacers inside the shocks to adjust their length, but anything more than 5mm longer than stock is too long. You can choose from inexpensive plastic units, anodized-aluminum shocks, or high-zoot, hard-coated aluminum jobs. All are far superior to "friction" shocks!

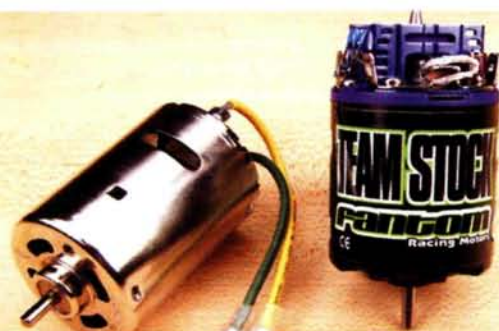


Fluid-damped shocks are offered by many manufacturers. These are from (left to right) HPI, CEN and Hot Bodies.

More power!

The sealed-endbell, 540 motors included with many RTRs will get the car rolling, but not very fast. Match your motor to the class you plan to race in. Stock class is best for beginners, while 19-turn or "chameleon-class" is faster for the more

advanced drivers. For stock-class racing, motors such as Trinity's Green Machine 3 and P2k2, Reedy Modifieds' MVP and "tuner" motors from companies such as Fantom are the hot choices. For 19-turn mod racing, Trinity's Chameleon and Chameleon 2 are the class standards, and many companies offer tweaked versions of the Trinity hardware. Take a look at what the fast guys are running!



The 540 stocker (left) will get you rolling, but a competition motor such as this Fantom Team Stock will make your car fast enough to race.

Increase adjustability with turnbuckle linkages

Fixed camber and steering links are standard for many RTRs. Although this is convenient because you don't have to worry about changing settings, it's inconvenient when it's time to dial in your chassis. With a set of turnbuckle linkages, you'll easily be able to adjust your vehicle's camber (the angle of the wheels as viewed head on) and front toe-in (the angle of the front wheels as viewed from above). Most kit manufacturers offer steel turnbuckles for frugal folks, but I suggest you go all the way and move up to titanium turnbuckles; they are virtually unbreakable and are very light. Lunsford and Associated's Factory Team line offer titanium turnbuckles for just about every car on the market; for custom applications, you can purchase turnbuckles individually by length.



Lunsford offers a full line of titanium turnbuckles.

WHAT ABOUT BATTERIES AND CHARGERS?

If you're tuning up to race, a high-capacity battery is a must; inexpensive 1500 packs just won't cut it. When you race, your battery is your fuel tank, so go with one that will supply enough juice to get you from start to finish. You don't have to break the bank to buy better batteries; unmatched 2400 Ni-Cd and 3000 NiMH packs will certainly do the trick. Matched packs, which use cells custom-selected for equal capacity and voltage, cost more and are overkill for club-level,

beginner racing. When your best lap times match those of the A-main drivers', you can move up to matched packs.

Now is a good time to think about your charger as well. A good charger will help maintain your battery pack's performance, and that will pay dividends on the track. An inexpensive peak-

detection charger is better than a wind-up timer charger. Peak chargers ensure that your pack is fully charged every time, and that not only helps run time, but it also preserves the battery's condition over the long haul. They are available in many configurations, but I recommend a NiMH-compatible AC/DC charger because NiMH packs will soon be the most commonly used batteries in RC. If you already have a charger and it isn't NiMH-compatible, stick with Ni-Cd batteries; any battery rated for 2400mAh or less is a Ni-Cd and is safe to use with your charger.



That wasn't so hard now, was it? Take pride in the work you put into your car or truck. When you've turned that backyard basher into a track terror, you'll be rewarded with increased durability, higher top speed and more fun. "Drivers ... on the tone!"

SOURCE GUIDE

DURATRAX distributed by Great Planes Model Distributors (800) 682-8948; duratrax.com.

DYNAMITE distributed by Horizon Hobby (800) 338-4639; horizonhobby.com.

FANTOM RACING (616) 649-9583; fantom-motors.com.

HUDY SPECIAL PRODUCTS distributed by Serpent Inc. USA (305) 639-9665; hudy.net.

MIP (626) 339-9007; miponline.com.

NOVAK ELECTRONICS INC. (949) 833-8873; teamnovak.com.

PRO-LINE (909) 849-9781; pro-lineracing.com.

REEDY a division of Team Associated.

RPM R/C PRODUCTS (909) 393-0366; rpmrcproducts.com.

TEAM ASSOCIATED (714) 850-9342; teamassociated.com.

TRINITY PRODUCTS INC. (732) 635-1600; teamtrinity.com.

TRC distributed by Trinity Products Inc.

Shock Rebuild

Oil-shock overhauls made easy by Stephen Bess

On-road or off, some of the hardest-working parts on your car or truck are its fluid-damped shocks (often called "oil" shocks, even though the silicone fluid most commonly found inside them isn't really oil). They're constantly at work. Every second of every run, the shock shafts are wearing against their O-ring seals, and the pistons are rubbing the inside of the shock bodies. The fluid inside the shock gradually becomes contaminated by material pulled past the shock seals and the matter worn from the shock's internal parts. For best shock performance, regular rebuilds are a must; if you've waited so long that fluid is seeping from the seals or shock cap, your shocks are definitely due for a rebuild. Here's how to get the job done.



Step 1 Remove and disassemble the shocks

Take off the shocks and remove the lower spring retainers, the shock springs and any other retainers and clips. Unscrew the caps or cartridges (depending on the shocks' style) and organize the parts on a clean surface.



Above: compress the shock shaft slowly to expel the old shock fluid. **Right:** use a solvent-type motor spray such as Trinity Buggy Blast to completely remove any leftover shock fluid.

Step 2 Clean the shock bodies

After disassembling the shocks, you'll need to pour all the fluid out of the bodies and clean every part thoroughly. To clean out as much fluid as possible, hold the shock body over a trash can and pump the shock shafts slowly; you don't want the grime trapped in the cylinder to wear the internal seals. Use clean cotton swabs to get down into the shock body and remove any oil residue; be sure to pay extra attention to the threaded and sealed areas of the shocks. Then blast the shock bodies, caps, springs and retainers with motor spray and clean them off with paper towels. Every part should be as clean as possible.

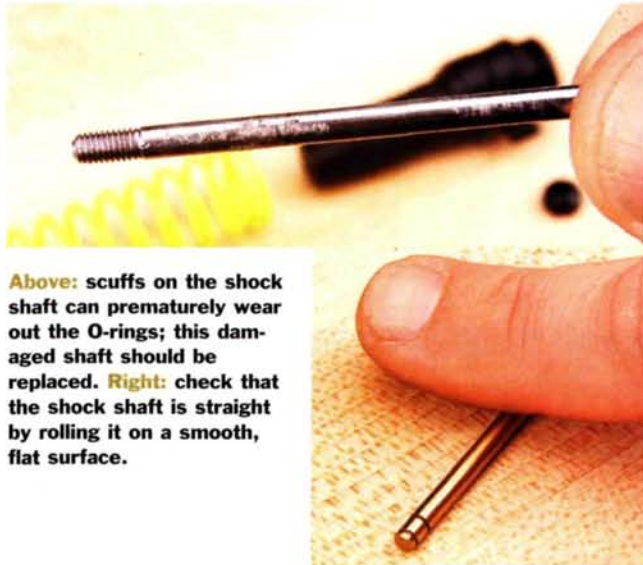


- YOU'LL NEED**
- Paper towels
 - Cotton swabs
 - Motor spray
 - Shock fluid
 - Team Associated Green Slime seal lube



Step 3 Inspect components for wear

After you've cleaned the shocks, inspect them for wear. The shafts should be smooth and shiny; if any look worn or damaged, replace them to prevent the shocks from leaking or being contaminated. Gouged and scuffed shafts attract gunk and then bring it into the shock bodies, and they can also tear the shock seals and allow the shocks to leak. Next, check for bent shafts by rolling them on a clean, flat surface. If any of them wobble when they roll, replace them.



Above: scuffs on the shock shaft can prematurely wear out the O-rings; this damaged shaft should be replaced. **Right:** check that the shock shaft is straight by rolling it on a smooth, flat surface.

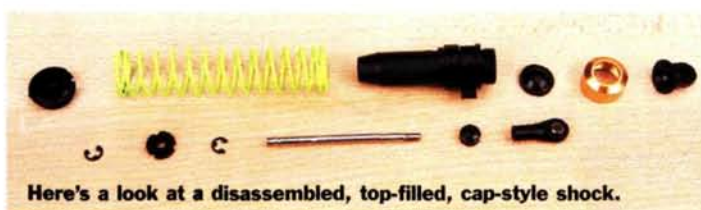
Step 4 Inspect the seals

Next on the inspection list are the shock seals. Seals are vital for durability and performance, so don't skip this step. Here's how to remove and inspect both styles of shock seals.



The shock cartridge (to the right on the threaded body) has a snap-on cap to retain the O-ring.

Pop open a cartridge shock with a small, flat-head screwdriver and remove the top. Cap-style shocks come in several varieties. Team Associated shocks require the use of a seal-removal tool that is pushed into the bottom of the shock body to pop out the seals and



Here's a look at a disassembled, top-filled, cap-style shock.

retainers. With a cap style that screws onto the shock bottom, you'll need to unscrew the cap and then use a small flat-head screwdriver or an Allen wrench to pull out the seal. If your shocks' seals are held by small, wire C-clips, carefully pull out the clips with needle-nose pliers and remove the seals with a small flat-head screwdriver.

For all types, inspect the seals for signs of wear, burrs and tears and replace if necessary; then follow the previous steps in reverse order to reinstall them. Consult your vehicle's instruction manual if you aren't sure how to reassemble the shocks.



Some shock seals have a wire retainer that must be removed before you can service the seals.

Step 5 Reinstall the shaft/piston assembly

Before you slide the shock shafts through the seals, dab a little Green Slime on the parts. This extra lubrication will reduce "stiction," improve sealing and help prevent the shaft threads from tearing the seals.



Always fill your shocks with fresh silicone fluid. If you don't know what viscosity was originally used in your shocks, consult the instructions.

Step 6 Fill and bleed the shock bodies

Depending on the shock style, follow one of these two steps to replace the fluid. For bottom-filled shocks, turn the shock body upside-down and slowly fill it with new fluid. When it's nearly full, press the shaft assembly completely into the shock body and fully screw in the cartridge. A little fluid should seep out of the threaded area; wipe away this excess oil with a paper towel.

For a top-filled shock, insert the piston assembly into the body and, while holding it upright and tilted slightly, slowly pour in fresh shock fluid. When the body is $\frac{3}{4}$ full, slowly move the piston up and down to replace air trapped beneath the piston. After the released air bubbles dissipate, fill the rest of the body with fluid.



Above: compressing the shaft allows excess shock fluid to drain out. Center: trapped air in the shock cylinder can

cause poor shock performance; make sure that there aren't any air bubbles in the fluid before you install the cap.

Left: fill the shock completely and thread the cap on slowly to allow excess fluid to seep out.



If the shock has a rubber bladder, insert it into the cap and use a small flat-head screwdriver to carefully seat it into the cap's recess. Fill the shock with oil to the top of its case, and slowly screw on the cap, allowing excess oil to escape through the threaded area as you tighten; wipe this oil away with a paper towel. Push the shaft up to the

cap and cinch the cap down securely.

For bladderless shocks, fill the caps with a few drops of oil and quickly screw them onto the filled bodies. Before tightening the cap completely, push the shock shaft into the body. Some fluid should seep out around the threads; wipe this excess oil away with a paper towel and then fully tighten the cap.

Step 7 Reinstall retainers, springs and clips

Slide the retainers, springs and clips back onto the sealed shock bodies and spray the shock exteriors with a healthy dose of motor spray to remove any traces of shock oil. When they are dry, your shocks are ready for reinstallation!



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Reedy Quasar and Quasar Pro

Charging ahead
with Mike Reedy by Gary Katzer

Over the past two decades, Reedy has won more titles than any other battery company—most notably, the IFMAR World Championships. But juicing up Reedy cells was left to other companies; no charger bore the Reedy name. That has changed. Reedy's Quasar and Quasar Pro chargers were designed with an emphasis on flexibility, NiMH compatibility and ease of use. I tested both to see whether Mike Reedy has successfully packed his winning ways into these new units.



MANUFACTURER'S SPECIFICATIONS

Case size	150x100x50mm
Input	120V AC, 15V DC (switching power supply)
Output	4 to 8 cells (4.8 to 9.6 volts)
Battery capacity	50mA to 6000mA
Charge rate	0.1 amp to 6.5 amps
Input cord	AC/USA-type plug and DC alligator clips
Output cord	Tamiya plugs with adapter for alligator clips
Voltage protection	yes
AC fuse protection	built in
Price	approx. \$100 (varies with dealer)



QUASAR. The "standard" version is very easy to operate, but a lot of high-tech stuff happens inside. To keep it NiMH-friendly, its charging software actually varies the voltage-threshold setting as the pack is being charged. Without any input from you, the Quasar constantly monitors the pack on the way to a full charge.

OPERATION

To set up the Quasar, simply plug the power cord into the charger and plug the charger into a wall socket. I read through the well-written manual, and in a matter of a few minutes, I was ready to begin testing. A rotary dial sets the charge current, and to start charging, just push the "start" button. A single button and two LEDs—one labeled "Charging" and the other "Complete"—indicate charge status. When the pack is fully charged, the charging LED stops flashing, and the "Complete" LED lights up. That's it.

TESTING

To get a base line on how the Quasar performs, I charged a fully depleted 2400mAh pack with the amperage set to 5.5 amps (as indicated by the amp-adjustment knob) and let the charger do its thing. After about 30 minutes, the pack reached a full charge. It was a little warm, but the charger's case was not (it keeps its cool). I dumped the pack on a 10-bulb discharger, and 423 seconds later, it had taken a good charge—equal to or better than the charge I had obtained with this pack from more expensive chargers. Similar bench tests with Panasonic Stock Metal Hydride cells produced equally good results. The 8mV-default peak setting seems to be a good choice, as my NiMH packs all stayed relatively cool, so the Quasar was not over-charging them.

THE VERDICT

The Quasar doesn't have many frills, but it's versatile and reliable, and it couldn't be easier to use. I do wish for two more features: an audible beep to let me know the pack has peaked (so I won't have to watch for the LED to wink on) and a pair of jacks (so I'd be able to monitor the pack's voltage with a digital voltmeter as it charges). These are convenience gripes; what matters most is performance, and by my tests, the Reedy Quasar performs as well as units costing twice as much.

FEATURES

AC/DC POWER INPUT. The need for external DC power has been eliminated thanks to a built-in switching power supply, but the charger is still relatively small despite the additional hardware required for AC operation. Alligator clips are supplied so that you can attach the Quasar to a DC power source at the field.

ADJUSTABLE CHARGE AMPERAGE. Unlike most entry-level or sport chargers that max out at 4.5 amps, the Quasar allows racers to charge from 0.5 amp to a full 6.5 amps. This makes it suitable for everything from transmitter and receiver batteries up to 8-cell high-capacity packs.

NICKEL-METAL-HYDRIDE- (NIMH) COMPATIBLE. It's rapidly becoming a NiMH world, so true compatibility with these cells is a must. The Quasar was built and programmed with NiMH cells in mind, and it has a non-adjustable voltage-threshold setting of 8mV.

FACTORY-INSTALLED CONNECTORS. In keeping with stick-pack standards, the Quasar is equipped with a Tamiya-style battery connector. For drivers who use different connectors or hard-wire their packs, Reedy includes alligator clips that are wired to be plugged into the Tamiya connector.

INTERNAL COOLING FAN. A fan built into the side of the unit effectively prevents the power supply from overheating; the temperature of the Quasar's case never exceeded ambient room temperature during any of my tests.

"COMPUTER-STANDARD" POWER CABLE—a minor feature for some, but a major bonus for me. I always lose cords and cables, so it's nice to know I can pick up a replacement from the computer section of any office-supply store. Or I could just use the cable from my printer.

QUASAR PRO. I classify the Quasar Pro as a battery-maintenance system, as it is more than just a charger. In addition to charging 4- to 8-cell packs, it can discharge and cycle batteries to maximize their performance; program one, two, or three charge/discharge cycles to pep up those weary packs. Likewise, the Pro's charge functions are fully adjustable to suit a specific pack's needs; it's a true professional charger.

OPERATION

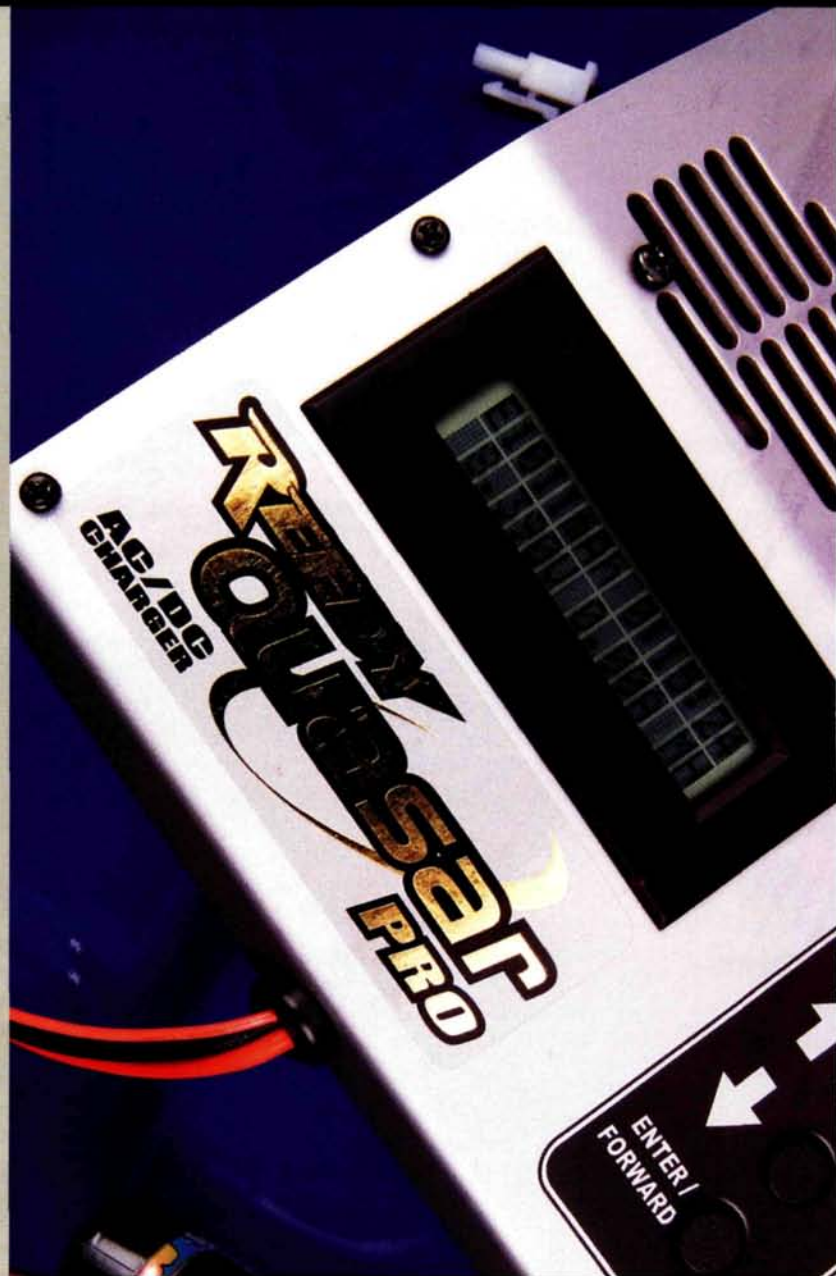
Four buttons are all it takes to program and operate the Pro. "Back/Setup" accesses the programming menus; if you need to edit a previous setting, just tap that button again. The up and down arrow buttons raise or lower the numeric settings to your preferences, and the "Forward/Enter" button locks the setting in; push that button again to start charging. The Pro is easier to use than to describe, and there's always the well-written instruction manual to fall back on if you're ever uncertain about what to push and when.

TESTING

I had a few packs I hadn't cycled for about four months, and I wanted to see how the cycle mode would help restore their performance. I programmed the Pro to charge them at 5.01 amps with the pack capacity set to 3000mAh and a peak detection of 5mV. On the discharge side, I set the load to 20 amps with a 1-minute delay between when the pack peaks and when the discharging begins. Finally, I set the Pro to rest for 30 minutes between the three charge/discharge cycles. Before the Pro starts to charge when cycling, it will first equalize the cells by discharging each to 0.9 volt. Even if the pack is fully discharged, the Pro will attempt to discharge it and will then go into "Time after discharge." This means a 30-minute wait before anything happens. When the countdown timer reached zero, the first charge cycle began. I monitored the charger and pack throughout the cycling process, and the Pro's temperature stayed just above room temperature. As expected, the cycling did increase voltage (from 6.87 volts on the first cycle to 7.09 volts on the last one), and there was a slight reduction in run time (about 20 seconds). For stock racing, I'll give up a little run time for an increase in voltage any day of the week—and twice on Sundays!

THE VERDICT

The Quasar Pro is well built and fully programmable, so it's a perfect match for any pack. It's a winner because it can reliably fully charge a pack, but it can also cycle packs and display their performance, and that puts the Pro over the top. With the information it generated, I was easily able to determine which packs are killers and which are practice packs. Add the convenience of AC/DC operation in a compact, light package, and the Quasar Pro is difficult to fault.



Case size	170x160x50mm
Input	120V AC, 15V DC (switching power supply)
Output	4 to 8 cells (4.8 to 9.6 volts)
Battery capacity	50mA to 6000mA
Charge rate	0.1 amp to 6.5 amps
Trickle-charge rate	150mA
Discharge rate	0.1 amp to 20 amps (20 amps only with 7.2 volts)
Voltage threshold	2mV to 20mV
Delay after charge	1 to 10 minutes
Delay after discharge	1 to 60 minutes
Input cord	AC/USA-type plug and DC alligator clips
Output cord	alligator clips
Voltage protection	yes
AC fuse protection	built in
Price	approx. \$200 (varies with dealer)

MANUFACTURER'S
SPECIFICATIONS

FEATURES

AC/DC COMPATIBLE. Like its smaller brother, the Pro can be plugged directly into a wall socket. I won't miss carrying my power supply!

DUAL INTERNAL COOLING FANS. Two fans in the top of the Pro's case switch on and off as needed to keep the unit cool. When they do kick in, they are fairly loud.

LCD DISPLAY. There's a large, two-line LCD display on the front of the Pro, and four buttons help you navigate through the charger's menus. The "Back/Setup" button will get you into the menu to begin with, and the "Forward/Start" button will scroll you through the 10 menu options. In the cycling and discharge modes, current pack status and completed operational-mode information are shown on the LCD.

CHARGE/DISCHARGE CYCLING. This is where the "battery-maintenance" function I mentioned comes

into play. The Pro can discharge packs at a user-selected amp rate of 0.10 amp to 20 amps, and it automatically stops discharging when the pack is depleted to 0.9 volt per cell. In addition to setting the amperage, you can set the Pro to automatically recharge and dump the pack up to three times; this feature is handy to enliven "tired" packs and "wake up" packs that have sat unused for some time (and having the Pro cycle the pack automatically is far more convenient than having to mess with discharge bulbs). Exactly how much your packs improve with each cycle is easily gauged by the readout on the LCD; this shows total discharge time, average voltage while discharging and the capacity in milliamp hours that was discharged.

To prevent the heat of back-to-back charging and discharging from damaging your expensive packs, the Quasar Pro can be set to delay discharging when charging is complete and to rest between charge/discharge cycles. You set the length of the delay and the rest time allowed between cycles following the LCD screen.

BATTERY-SPECIFIC PROGRAMMABILITY.

When you set up the Pro, the LCD display prompts you to input specific details about the pack you plan to charge or cycle—number of cells, cell type (Ni-Cd or NiMH), rated cell capacity in mAh (e.g., 2000, 2400, 3000), etc.

ADJUSTABLE OVER-PEAK VOLTAGE CUTOFF.

Also known as voltage threshold or Delta-V, the over-peak voltage is the change in voltage the Pro will look for to indicate that peak capacity has been reached. The setting may be adjusted from 3mV per cell up to 20mV per cell.

SOURCE GUIDE

REEDY a division of Team Associated
(714) 850-9342; teamassociated.com.



3 easy steps to bling bling

How to polish aluminum

It seems as though every hop-up part for trucks these days is made of aluminum and anodized in blue, purple, gold, or occasionally red or green.

They're all attractive, but my favorite finish is the "natural look." Whether buffed to a satin shine or polished to a chrome-like glow, aluminum brightwork is a perfect match for any colored part and a great accent for any truck. In this edition of "4x4," I'll explain the techniques I use to strip and polish aluminum parts. All it really takes is a little time and the right products; you'll see.

You'll need:

- All-purpose metal polish
- 600- and 900-grit wet/dry sandpaper
- Oven cleaner
- Rubber gloves and eye protection
- A clean, soft rag
- Rotary tool with buffing bits (optional)
- Hand drill (optional)



This is what the aluminum will look like after you have sprayed it with the oven cleaner. Don't worry; a little sandpaper and polish will take care of everything.

1 STRIP THE ANODIZING

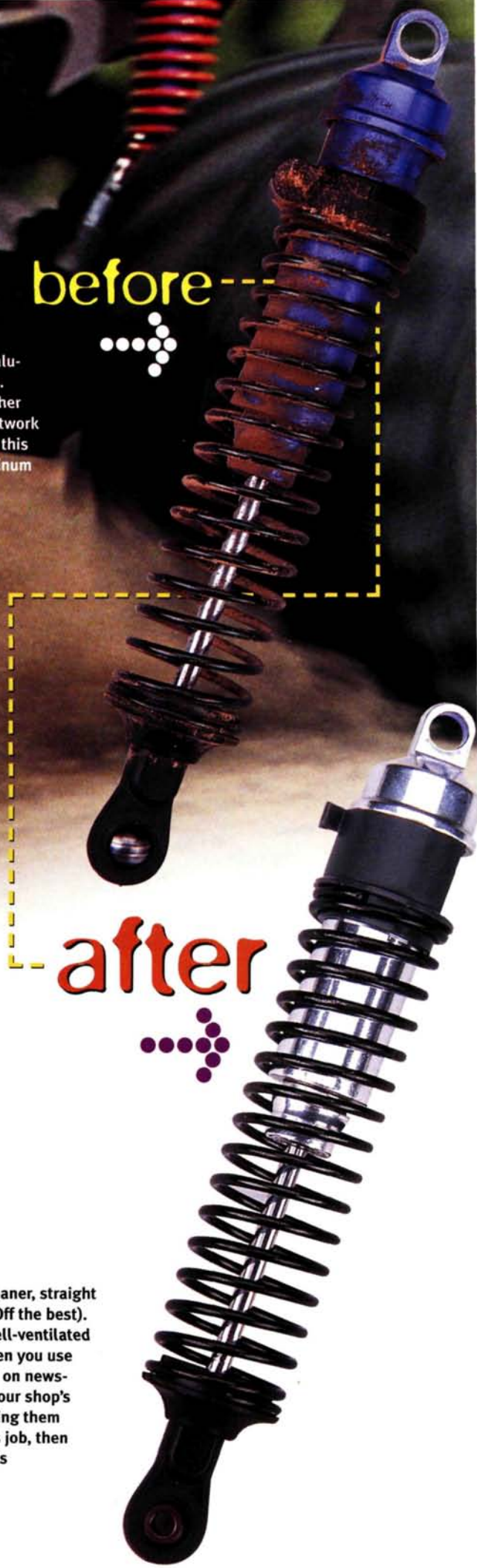
To remove anodizing, I use spray-on oven cleaner, straight from the grocery store (I like no-fume Easy-Off the best). Follow the warnings on the can, work in a well-ventilated area and wear gloves and eye protection when you use oven cleaner; it's nasty stuff. Place the parts on newspaper or on a piece of cardboard to protect your shop's

work area from overspray. Spray the oven cleaner onto the parts, covering them completely. Let them sit for a few minutes to allow the cleaner to do its job, then scrub them with soap and water to remove the oven cleaner. Repeat this process until all the anodizing is gone.

before



after



2 SANDING You parts won't look so good at this point, but don't worry; we're about to fix that. Head to the automotive paint-supply store and grab some fine, 600- and 900-grit wet/dry sandpaper and use it to clean up the aluminum's surface before you add polishing compound. Parts such as bulkheads and suspension arms are a little more time-consuming than round parts because they have lots of surfaces that need to be sanded, and everything must be sanded by hand. Round parts are a lot easier; place them in a drill, and sand the part while it's spinning (use a low-speed setting, and coat the sandpaper with oil to prevent it from becoming clogged). Completely sand the parts with 600-grit sandpaper until all the foreign matter has been removed from the surface, then switch to 900-grit and repeat the process. You may have to wrap the sandpaper around a small stick or a wooden dowel to get into tight spaces. Finish by rubbing the part all over with fine steel wool.



The easiest way to sand and polish round objects is to spin them in a drill or a drill press. Not everything will fit in the chuck, though, so if there is a hole at the end, as on this shock, you can pass a screw through and secure it with a nut. Then place the threaded portion of the screw in the chuck.

To remove the oven-cleaner residue, sand the part with fine-grit sandpaper. I like to start with 600-grit wet/dry sandpaper and work my way to finer grits. The finer the grit, the better the finish. Use a little oil on the paper to prevent it from becoming clogged.



The last step is to rub polishing compound on the part. Use a damp rag to apply the polish and a dry rag to wipe it off.



3 POLISHING You might be happy with the way your parts look at this point, but don't get too excited yet; they're going to look even better. Now is the time to do the final polishing with aluminum polish. I like Blue Magic metal polish crème, but any all-purpose metal polish will work well. For complex parts, use a rotary tool with buffing wheels of various sizes to polish the surfaces of the aluminum. I like to hand-apply the polish to the part with a damp rag before I use the buffing wheel so that I can apply the polish evenly. To prevent the polish from being dried by the heat generated by the friction between the buffing wheel and the aluminum, run the rotary tool at low speed. For the round parts, just leave the part in the drill chuck and apply the polish with a damp rag while it's turning. Be careful when you come close to the drill chuck; you don't want to get your fingers or the rag caught in the drill. When you've finished the polishing, wash the part with soap and water to remove any polishing-compound residue.

Now that wasn't so bad, was it? A brightly polished finish does take a little time, but it's time well spent. To preserve the bright look, you can maintain the finish with touch-ups of metal polish or seal the parts with spray-on clearcoat (check the spray-paint section at the hardware store). If you don't seal or maintain the polished finish, the bare aluminum will oxidize and become dull, but you can always buff it back to a shine again.

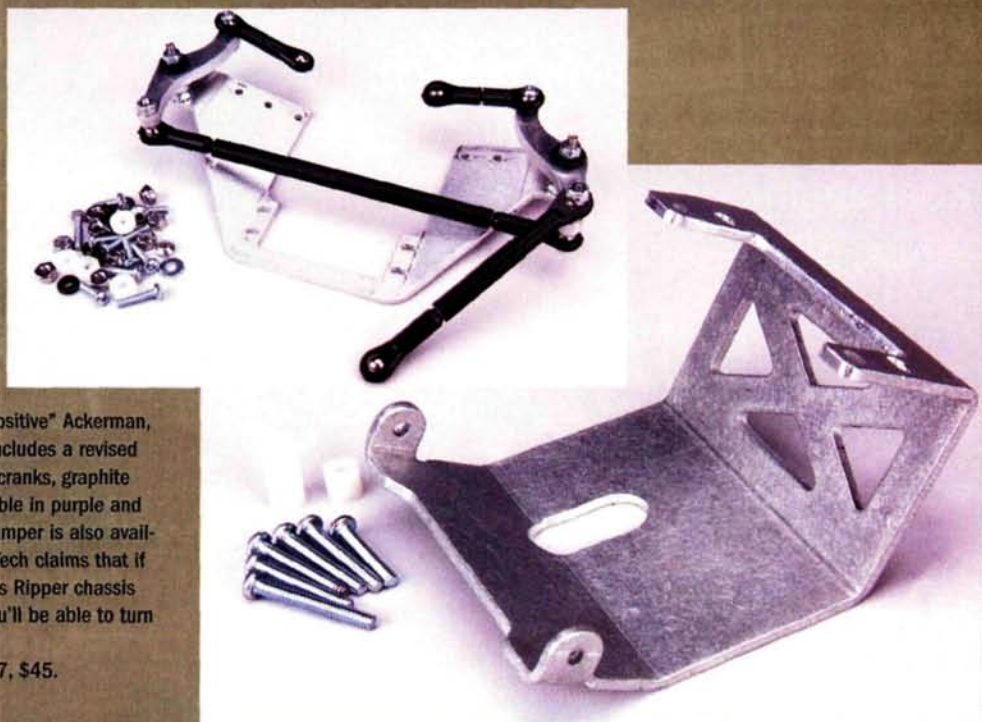
TRICK TRUCK STUFF

THUNDER TECH RACING Eliminator steering system for Tamiya Clod Buster

According to the guys at Thunder Tech, the new Eliminator steering system is designed to turn "negative" Ackerman into "positive" Ackerman, and it increases total steering throw. The kit includes a revised Thunder Tech servo mount, two aluminum bellcranks, graphite links and Rocket City ball links, and it's available in purple and black (a prototype is shown). An aluminum bumper is also available to protect the Eliminator parts. Thunder Tech claims that if you combine the Eliminator steering kit with its Ripper chassis and suspension kit and its wheel wideners, you'll be able to turn your Clod in a 4-foot-diameter circle.

Eliminator steering system—item no. ALU-CB07, \$45.

Optional bumper—ALU-CB08, \$25.



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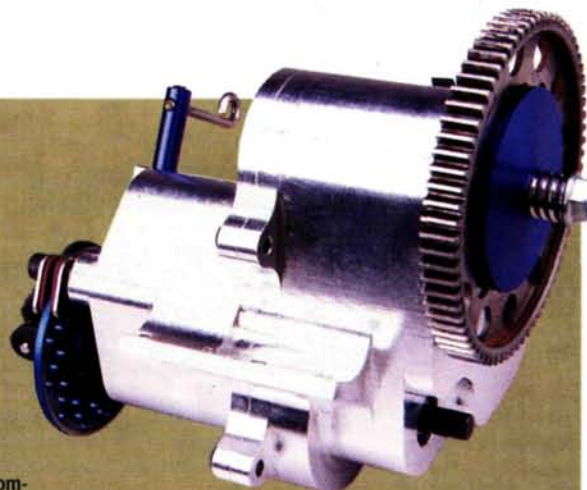


4 X 4

TRICK TRUCK STUFF

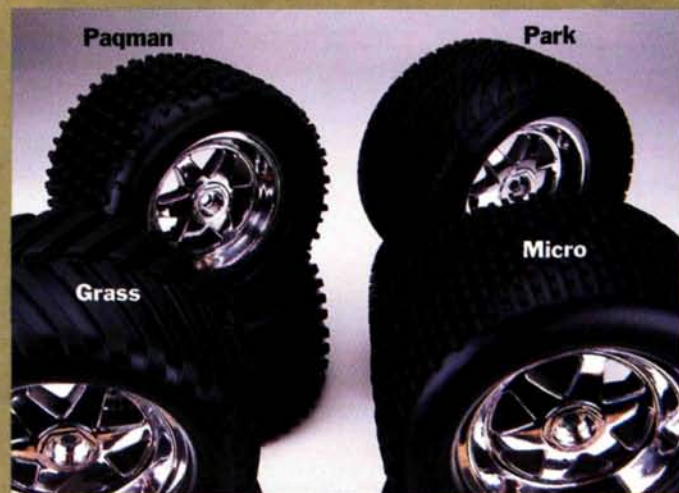
ROBINSON RACING Ultimate transmission

Robinson Racing is known for producing high-quality transmission components for the Traxxas T-Maxx. In fact, if you combine all the parts the company offers, you can build the ultimate bombproof transmission assembly. The stock plastic spur gear gets replaced with Robinson's lightened steel gear, which is attached to a lightweight, vented-aluminum slipper disc. The slipper disc and large friction pads on each side allow a wide range of adjustments. The primary forward gear also takes a lot of abuse; Robinson offers a direct replacement part in hardened aluminum. You can put a little more pep in your T-Maxx by installing Robinson's forward-only gear set. The kit replaces the forward and reverse output gears, shift fork and clutch ring. For increased weight reduction, the shifting servo can also be removed. You can protect the internals with Robinson's forward-only gear case. It's CNC-machined from a big chunk of aluminum billet, and it looks great. Robinson also offers a high-performance aluminum disc-brake kit with a vented rotor for more consistent braking with minimum brake heat. The aluminum rotor is squeezed by two large brake pads that spread the load over more surface area on the disc. Lightened spur and double-disc slipper kit—RRP8472, \$43.75. Hardened forward primary gear—RRP8528, \$19.50. Forward-only hardened gear kit—RRP8585, \$25.75. Forward-only racing gearbox—RRP8595, \$230. High-performance brake kit—RRP8560, \$36.



TRC OFF-ROAD Maxx tires

TRC makes some serious shoes to fit the Traxxas T- and E-Maxx and the Tamiya Terra Crusher. Four types are available: Park, Grass, Micro and Paqman. The Park tire is mainly used for on-road surfaces; the Grass tire works well on just about any surface. For diehard racers, the Paqman and Micro are the ones to have. The tires come factory-mounted and are glued with two-stage foams on chrome, wide-offset wheels. You can also buy the wheels and tires separately.



TRC Off-Road Maxx tires (mounted/unmounted, per pair):

- Park—TGY01C/TG01C, \$39.99/\$27.99.
- Grass—TGY03C/TG03C, \$39.99/\$27.99.
- Micro—TGY04C/TG04C, \$39.99/\$27.99.
- Paqman—TGY05C/TG05C, \$39.99/\$27.99.
- TRC T-Maxx chrome wheel—TGY, \$13.99/pair.

TALK TRUCK!

Send your "4x4" questions and comments to Kevin Hetmanski, kevinh@airage.com.

SOURCE GUIDE

ROBINSON RACING PRODUCTS (209) 966-2465; robinsonracing.com.
THUNDER TECH RACING (815) 467-0621; thundertechnracing.com.
TRC; distributed by Trinity Products Inc. (732) 635-1600; teamtrinity.com.

Lord of the Ring

The release of Thunder Tiger's EK-4 monster truck caused quite a stir. The EK's .70 BX(R) engine (originally designed for model helicopters) is wildly powerful, but it is vastly different from other RC car engines because it features a ringed piston. I receive tons of email every week asking me what makes a ringed engine so different from a taper-fit (lapped) engine, so this month, I'll clear up the confusion about the differences between ringed and tapered-sleeve 2-strokes.

COMBUSTION PRESSURES

Regardless of its design, every internal-combustion piston engine relies on the ability to compress fuel and air inside the combustion chamber. This compressed mixture is then ignited, burned and converted into power as the piston is forced downward. Without a way to seal and compress the fuel mixture, fuel and air rush past the piston, and power is lost. One of two basic piston designs is used to seal off the combustion chamber: a taper fit between the piston and sleeve or a ringed piston.

The vast majority of RC car 2-stroke engines have a tapered piston sleeve. As the piston travels upward inside the sleeve, it is pinched by the gradually tapering sleeve, and as a result, it seals

the combustion chamber. These engines use either "ABC" or "ABN" construction, in which the brass ("B") sleeve is either chrome- ("C") or nickel ("N")-plated. The advantages of taper-fit construction are relatively short break-in periods and high-rpm capabilities. The primary disadvantage of a taper-fit engine is a relatively short life when compared with typical ringed engines; once enough material has been worn away from the piston and sleeve to impede adequate sealing, the piston and sleeve must be replaced.

RINGED PISTONS

Ringed pistons have a long history. Current 4-stroke automobile engines have compression rings around their pistons, and before

the advent of CNC machinery, ring-sealed technology was the most affordable construction method for model engines. Although ringed engines were once cheaper to produce, engine manufacturers have become accustomed to the precision of CNC machines and can produce ABC engines more cheaply than ringed engines.

Ringed engines such as the TTR .70BX have steel sleeves that are straight from top to bottom—no taper, and generally, no plating. The compression ring takes the place of the tapered sleeve to seal the air/fuel mixture in the combustion chamber. The result is an engine that feels unusually free and loose (without a pronounced "thump" when it's rotated by hand) because the compression ring is the only part of the piston that's in contact with the sleeve.

RINGED ENGINE BREAK-IN AND MAINTENANCE

The loose feeling that ringed engines possess leads some modelers to believe that the engine has already been broken in, but they couldn't be more wrong; because of the super-hard steel sleeve and an even harder compression ring, ringed engines take as much as two gallons of fuel to be properly broken in, whereas ABC engines may be broken in after five to 10 tankfuls.

Tuning a ringed 2-stroke engine also differs from tuning a car-specific ABC engine; ringed engines must be run far richer than ABC engines, or fuel with a higher lubricant content must be used. Typical fuel for ABC engines has about 12 percent lubricant, whereas ringed-engine fuel should have 14 to 18 percent lubricant.

Some veteran 2-stroke-engine tuners who are accustomed to taper-fit pistons and sleeves experience problems with ringed



The compression ring has a gap that is indexed to the ring groove with a pin. This prevents the ring from rotating when the piston moves up and down and keeps the ring gap aligned with a section of the piston sleeve that doesn't have a port. If the ring gap were to travel over a section of the sleeve where there is a port, the ends of the ring would enter the port and cause engine failure.



The piston from the Thunder Tiger .70 engine used to power the EK-4 truck (right) features a piston ring that seals the piston to the cylinder, as opposed to the ringless, ABC design of the small, .12 piston shown on the left. The addition of a piston ring means some changes must be made to the maintenance routine to ensure maximum performance and life.



ABC engines' pistons do not have rings. They rely on the precise fit between the piston and sleeve to maintain compression. It's a lightweight and simple design that's very effective, but it makes tuning more critical. Bad fuel-mixture settings can quickly erode the tight fit required between the piston and sleeve and reduce engine performance.

2-strokes. Other than a failure to adequately break in the engine, the most common problem occurs during rebuilds. Experienced hobbyists feel comfortable disassembling and rebuilding their engines to check for signs of wear, but when reassembling a ringed engine, it can be difficult to distinguish the piston's proper orientation. Ringed pistons are not configured with holes or cutouts on the piston/rod assembly that make it easy to orient the piston properly. Instead, the gap in the ring must be aligned with an area of the sleeve where there are no ports. Installing a piston/rod assembly backwards may cause the ring gap to align with one of the many ports in the sleeve. If either of the ends of the compression ring enters a port while the piston is moving up and down, it's

basically game over; the engine will fail catastrophically. As a result, it's extremely important to note the piston/rod orientation with a permanent marker whenever you tear down a ringed engine.

DON'T FEAR RINGED ENGINES!

Ringed engines are nothing to be afraid of; for many applications, they're perfectly suited to making reliable, long-lasting power. The distinction between ABC car-specific engines and ringed 2- and 4-stroke engines merely requires a brief learning period to adjust to the maintenance and tuning variances between the designs. Taper-fit ABC 2-strokes do provide a much higher rpm range, which is why they're so popular for .12 and .21 racing engines, but don't hesitate to give a ringed engine a shot if the opportunity arises!

Q When my car wouldn't start, I replaced the fuel tank and lines because I thought they were leaking; the gas was never getting pressurized in the carb. This worked for a while, but then the engine started hissing from the carb, and fuel bubbled up in it. So I cleaned up all the fuel, and now the engine won't start again (it starts when I put gas directly into the carb, but it dies when the gas runs out). I think the engine is leaking, and it isn't creating enough pressure to pressurize the fuel tank. What do you think? [email]
Chris (GTRacer22)

A Leaky engines rarely idle well and will lean out over the course of a tank of gas, regardless of the settings. If you're concerned about air leaks, simply run a thin bead of oxygen-sensor-safe silicone around the backplate and the base of the carb and the high-speed needle. A small air leak won't prevent an engine from pressurizing the fuel tank, however.

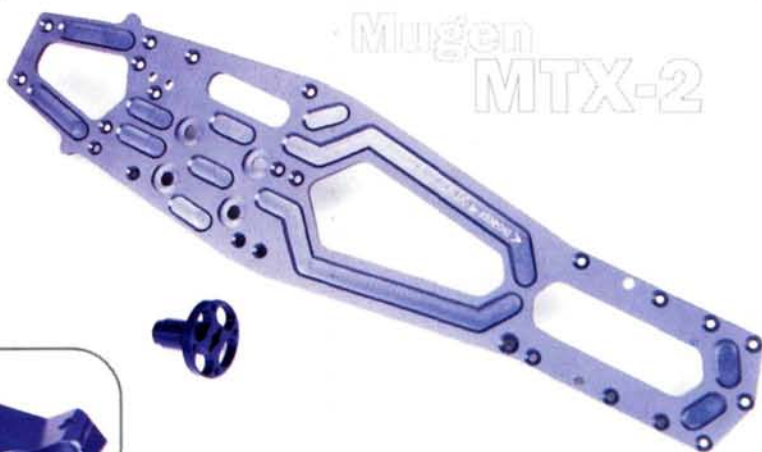
It sounds to me as though your air/fuel mixture is simply too lean. Any time you see or hear hissing from the carb, it indicates that fuel is boiling in the venturi, and chances are your engine is too hot, and that may create a vapor lock. Vapor lock occurs when the engine is so hot that the fuel vaporizes before it reaches the carburetor's venturi. When a high volume of air is introduced into the fuel system, the suction (or siphon, such as when you siphon a fish tank) is lost, and this disrupts fuel flow and causes a lean mixture or stalling. Allow the engine to cool, richen the air/fuel mixture and restart your engine. Keep an eye on temperatures, tune the engine to best performance, then continue to richen the engine until a reasonable temperature is reached.

NEW FOR NITRO

FIORONI Upgrades for GS Storm and Mugen MTX-2

Fioroni's machined-aluminum pieces are sure-fire durability upgrades. For the GS Storm, Fioroni's "rear gearbox strengthening brace" (right side) increases the buggy's ability to survive crashes with its rear bulkhead in one piece, and the blue-anodized rear knuckle arms look super-trick and retain all five of the stock hubs' camber-link holes. Small Teflon inserts in the lower hinge-pin holes allow toe adjustments.

For Mugen's MTX-2 nitro sedan, Fioroni offers a CNC-machined, hard-anodized and lightened chassis to provide



maximum stiffness with minimum weight. Racers who compete on large, sweeping tracks will appreciate Fioroni's blue-anodized solid rear axle. If you eliminate the rear gear differential and replace it with this lightweight CNC piece, your MTX-2 will benefit from quicker acceleration without a loss of speed through corners on large tracks.

- Fioroni rear bulkhead brace for GS Storm—item no. OT-GS14; \$39.99.
- Rear knuckle arms for GS Storm—OT-GS07; \$89.99.
- Fioroni special lightened main chassis for Mugen MTX-2—OT-MG30; \$89.99.
- Rigid rear axle for MTX-2—OT-MG32; \$33.99.

SOURCE GUIDE

MUGEN USA (949) 707-5607; mugenracing.com.
OPTION TEAM PARTS BY FIORONI; distributed by General Silicones Co. USA (626) 338-3815; generalsilicones.com.
THUNDER TIGER/ACE HOBBY DISTRIBUTORS (949) 833-0088; thundertiger.com.

CONTACT THE PISTON POWER SOURCE

Send your Piston Power questions and comments to Stephen Bess, stephenb@airage.com.

Complex designs and do-it-yourself decals

It's a lot of fun to create a replica of a full-size body. You don't have to burn your creative energy coming up with an original paint scheme, and you know that the result will look cool (you know the original looks cool—right?).

Many popular vehicles can easily be duplicated with licensed decal kits from several manufacturers, but let's look at how to handle a complex paint job without the benefit of prefab stickers. You'll need a PC, a color inkjet printer and a little patience. You'll soon discover that complex designs don't necessarily mean complicated techniques!

In the same shopping center as my local hobby shop, there's an annual truck show, and this year's star was the U.S. Hot Rod Association's monster truck "Thrasher." You may have seen it on TNN "Monster Jam"; the big Ford is awesome, and Thrasher's owner/driver Pat Summa always pushes it to its limit.



1 Documentation. First, you'll need documentation. You don't need an expensive camera or a lot of photography experience. I just walked around the Thrasher taking pics with a disposable 35mm camera. Concentrate on capturing the little logos and



4 Sketch and mask. Study your photos and use a marker to establish your masking lines and paint lines. Your choice of masking is up to you; I think that for a design like this, liquid mask is far

easier to use than trying to tape it all—particularly all those checkers.

When I cut out a design, I follow the "3 and 3" rule: three coats of masking and no fewer than three X-Acto blades. Lexan dulls a blade quickly, so change it often! A thin coat of liquid mask and a dull blade make poor masking; sharp blades and a thick coat will ensure crisp lines.

more intricate details of your subject. If you have a digital camera and can download photos to your PC, that's great. If you don't, when you drop your film off for processing, check the box to ask for a picture disc. It costs extra, but it includes picture-editing software, and if you don't own a scanner, it's the only way to get the pictures into your computer.

2 Pick a body. Next, you'll need a body (go figure). Choose one that most closely resembles your chosen vehicle. For me, Parma's '97 Bigfoot body works well because it includes all of the cab fairings.



3 Break it down. Let's look at the Thrasher photos on a PC monitor; this is a huge benefit of having the photo CD. Don't look at the whole design, get discouraged and think that this paint job is too difficult to pull off. When you break it down, you'll see that there are really



only four parts to it: the Thrasher logo, a checkered portion, a few streaks and the background. The logo is the tricky part; see "Leggo my logo" for tips. The other parts can be duplicated with standard masking and painting techniques.

5 Paint! Your painting techniques will depend on the design you choose, but to illustrate the process, I show my truck as it transitioned through its various stages of color.

I painted the blue background first and then added purple, yellow and, finally, white. I left the white of the checkered flag for last so I'd be able to use the white to back the streaks as well. The



last step is to remove the marker lines, and this is easy to do with denatured alcohol. Body replicas with intricate designs are nothing more than a combination of several simpler patterns. When you're able to distinguish these, you'll see that the individual elements and colors aren't difficult to tackle. Leave such features as logos for the computer or

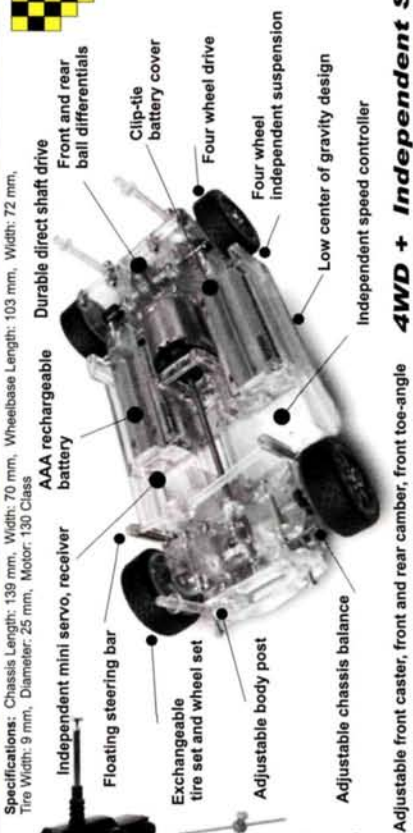
sticker sheets to handle, and concentrate on nailing the design's parts. Keep the email coming; it's always great to see what you're up to and to hear about your progress. Until next month: go paint something!

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BODY SHOP

Leggo my logo

The only real challenge in the Thrasher design is the logo. If you have a fancy graphics cutter or a lot of patience, you could probably paint it in, but here's an easier way to do it.

1 After taking photos and having them put onto a CD, save the logo pic to your computer as a BMP file. Fire up the Microsoft Paint program (every PC has this built in to Windows). Open your logo file and use the Paint editing tools to make a white border around the entire image.

2 After that, enlarge the image to fit your model. Make a test-print to ensure it's the size you need. When you're ready to print the real thing, go to the "Image" menu and flip the logo horizontally. We'll stick the decal inside the body, so we need a reverse image. Load your inkjet printer with clear, water-slide-decal paper; I use the Super Cal system from Micro Format, and it's available at most hobby, art and office-supply stores. You'll need a decal for each side of your model. When the sheets come out of the printer, don't touch them for a few minutes because the ink must be allowed to dry fully.

3 The decal system includes a protective spray. Follow the instructions carefully to achieve a smooth finish and a sturdy decal.

4 It's time to stick the decal to the inside of the body. Cut the decal out, and soak it in water to free it from the backing paper. About 10 seconds in lukewarm water should be enough to soften the adhesive and allow you to slide the logo off its backing. The excess water allows you to move the decal around until it's where you want it. Then blot the area dry using a soft cloth.

You can use water-slide decals on the body's exterior, too, but they'll soon be scratched, so reserve exterior water decals for the little details that are easy to replace.



5 Apply the body's window mask and quickly spray a coat of the decal kit's protective spray over the decal and the surrounding body areas. The spray is clear, so don't worry about overspray. I also brush a little white Faskolor behind the decal to give it maximum "punch" and to prevent the backing color from bleeding through.

Now you can complete the rest of your project!





FRESH PAINT

Mike Ogle is at it again. This time, he has focused his talents on the import scene with this Protoform RSX.

Mike's Acura sits on a Team Associated TC3 RTR chassis and features color-change Alciad II and Pactra paint, RPM wheels and exhaust, XXX Main and HPI carbon-fiber treatment and a fully detailed Parma interior. To see exactly how he did this, pick up a copy of the Fall 2002 issue of *Radio Control Touring Cars* ("How to Detail Your RC Import"). Mike's work is awesome but there is one thing that would make this RSX better—if it were mine ... or yours!



Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send print or slide photographs to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877, USA.

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NEW IN THE SHOP

DUPLI-COLOR Adhesion Promoter

It's frustrating when your new paint job flakes off during a skirmish with the boards or a rough tumble. Dupli-Color's Adhesion Promoter is a clear primer that will maximize the bonding of any type of paint. It's ideal for use on high-stress body sections and for paints that weren't designed for polycarbonate bodies. The product is applied to the inside of an RC body before your color coat. Adhesion Promoter is very easy to use and fast drying.
 Item no.—CP199; \$5.99/11-ounce can.



CONTACT BODY SHOP

Send your Body Shop questions and comments to Bob Hastings at bobh@airage.com.

SOURCE GUIDE

DUPLI-COLOR PRODUCTS GROUP (800) 247-3270; duplicolor.com.

MICRO FORMAT (800) 333-0549; supercaldecals.com.

PARMA/PSE (440) 237-8650; parmapse.com.

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ACCORDING TO OFNA, THE CHARGER KING IS A DO-IT-ALL Ni-Cd and NiMH charger with the features that electric and nitro racers demand yet is easy to operate for RC fans of all skill levels. Let's find out what this little silver box can do for you.

INCLUDED ACCESSORIES

The CK201 includes the following items: two power leads (one with a standard Tamiya connector and the other with an unfamiliar connector); a standard AC cord; and a long DC cord with alligator clips. A spare 7.5A fuse is also included along

with plastic standoffs that can be attached to the bottom of the charger to lift it at an angle to provide a better view of the LCD screen when you're sitting. Not included but available as an option is a battery-pack temperature probe.

FEATURES

AC/DC power operation. Nothing beats the convenience of being able to plug the charger into a wall socket. Large alligator clips are provided to hook the charger up to a power supply.

Automatic Ni-Cd and NiMH charging. No buttons to press; the CK201 knows the type of battery pack that's hooked up to it.

Automatic cell selection. Once the battery pack is connected, the CK201 checks the pack voltage and sets the number of cells automatically.

LCD display. A two-line LCD screen provides important charge information.

0.5 to 5A adjustable charge current. The CK201 will charge everything from delicate receiver and transmitter packs to larger sub-C and "D"-size battery packs.

0.3 to 2.5A discharge rate. Great for discharging receiver and transmitter packs.

Battery cycling. The CK201 will automatically charge and discharge (cycle) battery packs up to three times—very useful for bringing old Ni-Cd receiver and transmitter battery packs back to life.

1- to 12-cell (1.2 to 14.4V) charge output. The CK201 will charge from 1- to 12-cell battery packs in either AC or DC operation.



TESTING

An old Sanyo 2000mAh Ni-Cd battery pack was used for the first test. The charger beeped once and switched to the default trickle-charge mode. The charger automatically determines the battery type (Ni-Cd or NiMH) and the number of cells and makes the necessary adjustments—a nice feature. After pressing the rather small start button, the charger beeped a second time, and the small LED on the charger's faceplate lit up to indicate that it was fast charging.

The two-line LCD display indicated the charge status by registering the pack's voltage, amperage, charge time and capacity in mAh. This is very useful, as it makes it simple to monitor a pack's performance from charge to charge. About 20 minutes later, the charger beeped repeatedly to indicate that the battery pack was charged. When the charge cycle is complete, the voltage threshold and type of battery pack (Ni-Cd or NiMH) from the previous charge are displayed on the LCD screen. The Charger King was next tested with a few packs of Sanyo 3000 HV cells, which the charger recognized as NiMH and charged to full capacity without fail. After each charge, the packs were just slightly warm.

The charger's versatility was tested by charging some delicate receiver packs, including 8-cell, 1200mAh NiMH transmitter packs, 5-cell, 600mAh Ni-Cd receiver packs and tiny 5-cell, 150mAh Ni-Cd receiver packs. These small cells often cause problems for older chargers, but the CK201 charged them all without a problem. If it's rechargeable, the Charger King can charge it.

Throughout testing, the Charger King proved to be easy to use and reliable, and it had no trouble with back-to-back charging. The case got a little warm during testing, but it never became hot enough to pose a problem. It's a good unit.

PRODUCT WATCH

Fuse protected. The CK201 has a replaceable 7.5A fuse to protect the unit if you ever hook up the battery pack or power supply incorrectly.

Optional battery temperature probe. Allows you to charge the battery pack according to temperature (thermal charging). Once the battery pack reaches 48 degrees C, the charge process is terminated.

Removable charge leads and AC cord. This is a great feature because you'll be able to install power leads with various connectors quickly and easily. The standard AC cord can be easily replaced if it's lost or damaged.

Overall, the CK201 is a great charger for both electric and nitro racers. It charges just about

MANUFACTURER'S SPECIFICATIONS

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Operating voltage	110 to 129 volts (AC); 11 to 16 volts (DC)
Charge output	1.2 to 14.4 volts (1 to 12 cells)
Charge current	0.5 to 5 amps (adjustable)
Discharge current	0.3 to 2.5 amps
Protective fuse	AC input, 3 amps; DC input, 7.5 amps

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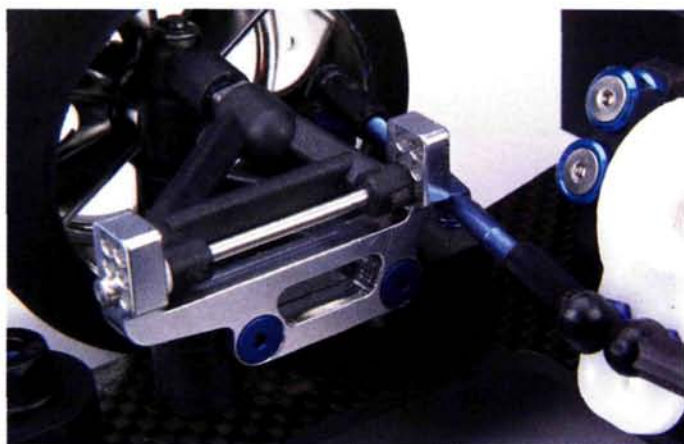


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ASSOCIATED'S DYNAMIC STRUT IS THE UNOFFICIAL FRONT END of nearly all pan cars (except for Trinity's, natch), thanks to its easy assembly and independently adjustable ride height, camber and caster. That's enough adjustability for most of us, but Irrgang Racing Service's (IRS) aluminum Dynamic Strut caster blocks increase the system's tunability with six new upper-arm hinge-pin positions that adjust the suspension's roll center. In addition, their stiff aluminum construction combined with a "wide mouth" design that reaches around the upper arm increases rigidity (but causes linkage clearance problems in 1/12-scale cars). The IRS blocks are nicely machined and directly replace the stock upper-arm stand-offs. Extra-long, E-clipped hinge pins are provided and slide easily through the upper arm—no more super-tight friction fit. Since style matters, IRS polishes the blocks to a bright shine, and no machine marks are to be found; this is first-class stuff all the way. Exactly how much the IRS parts will speed up your laps depends on your tuning skills, and the caster blocks aren't cheap—but they are very well made, look killer and offer a genuine advantage in the form of increased tuning flexibility.

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North Cullman Raceway, Cullman, Alabama 35058; Daniel Lollies, 256-775-2491; email: cullmanrchoobbies@yahoo.com; web: www.cullmanrchoobbies.homestead.com

Oak Mtn R/C Raceway, Columbiana, Alabama 35051; Matthew Gordon, (205) 669-6837; email: oakmtncraceway@hotmail.com

R/C Hi-Tech Raceway, Huntsville, Alabama 35811; Rick Chambers, 256-539-1347

Spring Cove International Speedway, Florence, Alabama 256-757-1562; email: rvines@hiway.net; web: www.springcovespeedway.com/SpringCove.htm

ARIZONA

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HobbyTown U.S.A., Phoenix, Arizona 85044; Doug McFarland, (480) 598-5282

R/C Sports Mania, Phoenix, Arizona 85017; Gary Dick, (602) 278-3671

Scottsdale R/C Raceway, Scottsdale, Arizona 85251; Scott Anfinson, 480-945-2186

ARKANSAS

Alison Offroad RC Raceway, Little Rock, Arkansas 72206; Steve Alison, (501) 490-1227; email: jason@alisonoffroad.com; web: www.alisonoffroad.com

Grand Slam Hobby, Ft. Smith, Arkansas 72901; Bryon Shumate, (501) 648-1994; web: www.gshobby.com

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Racer's Haven Raceway, Bakersfield, California 93309; Greg Cooper, 661-835-0441; web: www.racers-haven.com

Rescue Mini R/C Speedway, Rescue, California 95672; Bruce Pease, (530) 621-3948; web: www.innercite.com/~rccracing/

Ripon R/C Speedway, Ripon, California 95366; Dan Tanis, (209) 599-5160

Sacramento RC Racing & Hobbies, Sacramento, California 95824; Andreas Muller, (916) 424-4001; email: andreas123@earthlink.net; web: www.77sunset.com

Showtime R/C Speedway, Bakersfield, California 93301; Don Risner, 661-328-1481; email: showtimespeedway@aol.com; web: www.showtimespeedway.com

So Cal R/C Raceway, Huntington Beach, California 92646; Jim or Lana, 714-963-7484; email: info@socalrc.com; web: www.socalrc.com

SpeedWorld Raceway, Roseville, California 95678; Billy Bowerman, 916-783-8864; email: speeddog@mindsync.com; web: speedworldraceway.com

The Dirt Valley R/C Racepark, Hemet, California 92544; Joe Christenson, (909) 925-7592

Ventura RoadRunners, Camarillo, California 93010; Big Al, 805-564-4144; email: dudedbigal@aol.com; web: www.venturaroaddrunners.com

COLORADO

MHOR R/C Raceway, Aurora, Colorado 80011; Jess A. Brockman, (303) 343-0151; email: questions@mhorrcc.com; web: www.mhorrcc.com

Valley West Off-Road RC Club, Grand Junction, Colorado 81504; Jodie Grein, 970-242-1412; email: geerhed@gj.net; web: www.gj.net/~geerhed/vworcind.html

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First Coast Speedway, Jacksonville, Florida 32211; Bobby Phillips, 904-716-0861; web: www.firstcoastautotrac.com

G&C Hobby Raceway, Lantana, Florida 33462; George, 561-547-3812; email: gncobbies2@cs.com; web: www.gncobbies.com

GB's Hobbies, Port St. Lucie, Florida 34952; Track Owner, 561-460-2844; email: gaircrt@bellsouth.net

Grand Prix RC-Club, Ft. Pierce, Florida 34945; Luther Peterson, 772-473-2130; email: LWPSPEED@aol.com

Gulf Coast RC Car Club, Naples, Florida 34105; Mark Benfield, 941-774-7116; email: teamnofear@aol.com

Hobby Central, Pensacola, Florida 32504; Bill McLester, 850-471-9800; email: trackinfo@hobbycentralrc.com; web: www.hobbycentralrc.com

Hobby World Raceway, Jacksonville, Florida 32210; Greg, (904) 772-9022

Kissimmee R/C Auto Racing, Kissimmee, Florida 34741; John Rosser, (407) 944-4913; email: john@craftworldflorida.com; web: www.craftworldflorida.com

Means R/C Raceway, North Fort Myers, Florida 33903; Pete Gonzalez, (941) 772-2251; email: jaimewoot-ton@worldatt.net; web: members.nbci.com/wootj

Monster Hobbies, Deerfield Beach, Florida 33441, (954) 428-9118

Monza R/C Speedway, Miami, Florida; Ed Delgado, (305) 437-9895

Morris Kohl's Raceway and Hobby Shop, Tampa, Florida 33604; Morris Kohl, (813) 931-1626

My Rose Hobbies & Crafts, Jupiter, Florida 33458; Mark Watson, (561) 744-3800

NORRA, Naples, Florida 34104; Rob Dondorfer, 239-417-1099; web: www.norra.mainpage.net

Ocala Radio Controlled Car Club @ A2Z Racepark, Ocala, Florida 34478; Tom & Melanie Hitchcock, (352) 369-1895; email: staff@orccc.org; web: www.orccc.org

Port St. Lucie Racing, Port St. Lucie, Florida 34953; Frank Spadavecchia, (561) 336-8711

Pro Hobbies Speedway, Apopka, Florida 32712; Jim, (407) 886-4615; email: prohobby@juno.com

Sarasota RC Speedway, University Park, Florida 34201; Jim Wilson, (941) 358-7047

South Palm Beach Racers, Boca Raton, Florida 33486; Mike Fazio, 561-338-5367; email: epine01@bellsouth.net; web: http://communitylink.gopbi.com/group/spsbrclub

Superior Hobbies R/C Parking Lot Racing, Casselberry, Florida 32707, (407) 834-9299; email: racing@superiorhobbies.com; web: www.superiorhobbies.com

SWF RC Car Club, Fort Myers, Florida 33907; Mike Nardone, 941-278-1295; email: swfrcrcarclub@yahoo.com; web: swfrcrcarclub.tripod.com/swfrcrcarclub

Tallahassee R/C Speedway, Tallahassee, Florida 32301; Roland Costine, 850-671-2814; email: idothtre@hotmail.com; web: www.geocities.com/rcdude1/rccars.htm

Tampa R/C Raceway, Seffner, Florida 33584; Carole Raimondi, 813-655-6366; email: carolehobbytown@aol.com

West Coast R/C Club, Lutz, Florida 33549; J.R. Sanyet, President, 813-991-0168

KEY TO SYMBOLS

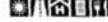
- | | | | |
|--|-----------|--|--------------------|
| | Indoor | | Concrete |
| | Outdoor | | Asphalt |
| | Off-road | | Minis & Micros |
| | On-road | | On-site hobby shop |
| | Oval | | AC power |
| | Dirt oval | | Auto lap counting |
| | Carpet | | Food available |

GEORGIA

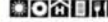
Augusta R/C Racer's Club, Augusta, Georgia 30909; Darren, 706-860-5608


Dalton Motorsports, Dalton, Georgia 30721; Keith Manton, 706-226-6699; email: dmso@alotao.net


Hobby Town Raceway, Columbus, Georgia 31909; Frank Bastos, (706) 660-1793; email: fbastos@mind-spring.com; web: www.hobbytown.com


Primetime Raceway, Calhoun, Georgia 30701; Tommy Jackson, 706-625-9037; email: primetimehobby@gccin-ternet.net; web: primetimehobby@gccin-ternet.net


SCORE-Phil Hurd Raceway, Pooler, Georgia 31322; Joe Ellis, 912-748-1988; email: jfillipow@scad.edu; web: www.score-racing.org


The Flight Box Hobby Shop, Rome, Georgia 30161-6826; Leslie Duke, (706)-234-3014


HAWAII

A.S.I. Racing, Kapaa Kauai, Hawaii 96746; Arnold Morales, 808-821-8132


Radio Control Assoc./Alaa Park Raceway, Pearl City, Hawaii 96782; Ace R/C Products, (808) 456-1279


Sandy Flemings, Pearl City, Hawaii 96782; Dave Caldwell, 808-456-7272; email: info@formula1-rc.com; web: www.formula1-rc.com


IDAHO

Almosta Ranch R.C.s, Twin Falls, Idaho 83301; Casey Clements, (208) 733-8667; email: james-casey-clements@hotmail.com


Capital Dirtburners, Boise, Idaho 83702; Joe Thompson, 208-466-6334; email: internarchitect@yahoo.com; web: communities.msn.com/capitaldirtburners


DM Raceway, Pocatello, Idaho 83201; Corey Aberett, 208-233-8163; email: dmraceway20m.com


Redneck Raceway, Pocatello, Idaho 83201; Randy Willson or Tim Hancock, 208-238-3353 or 208-238-0609; email: Redneck_Raceway@hotmail.com


AJs Raceway & Hobby, Dekalb, Illinois 60115; AJ, 815-756-2772; web: www.ajsraceway.com


C.I.R.C.A., Jacksonville, Illinois 62850; Sport En' Hobby, (217) 245-1375


His N Hers Hobbies Raceway, Bloomington, Illinois 61701; Kevin Turek, 309-827-0204; email: hisnher-shobbies@aol.com


HobbyTown USA, Oak Park, Illinois 60301; Mark or Fred, (708) 445-8056; email: htuopi@aol.com


Machesney Park Raceway, Machesney Park, Illinois 61115; Gina, (815) 282-1311; email: mpr30@aol.com; web: www.mpr30.homestead.com


Monee R/C Raceway, Monee, Illinois 60449; Roy or Roberta Moody, (708) 534-2422 (track), (708) 799-5597 (office)


Primetime Hobbies, Tremont, Illinois 61568; Don Davis, 309-925-9999; email: staff@primetimehobbies.com; web: www.primetimehobbies.com


Radio-Active Raceway, Bolingbrook, Illinois 60440; Jim, (630) 759-7557


Venture Raceways, Libertyville, Illinois 60048, (847) 549-6963


Bremen Racing Ent., Bremen, Indiana 46506; Dale Heuberger, 219-546-3807


Duneland Hobbies & Raceway, Portage, Indiana 46368; Ron, 219-763-1610; email: RTrobaugh1@email.msn.com; web: www.dunelandhobbies.com


Hobby Barn Raceway, Terre Haute, Indiana 47802-9694, (812) 299-5773

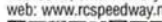

P&T Hobbies and Raceway, Mitchell, Indiana 47446; Paul Weber or Tom Logsdon, (812) 849-6666; email: pnthobby@quest.net; web: www.pnthobby.com


Pete Russell's R/C Speedway, Elkhart, Indiana 46516; Pete Russell, 574-293-1827


R/C World of Indiana, Lynn, Indiana 47355; Joe Kolp, (765) 874-2464; email: rcworld@rcworld.com; web: www.RCWORLD.com


RC Barn, Monroe, Indiana 46772; Mark Lengerich, (219) 692-6600; email: bigdaddy@adamswells.com; web: www.rcbarn.com


RCRCR Raceway, Boonville, Indiana 47601; Scott Payton, 812-477-9661; email: spdracer@speedex.net; web: www.rcrcr.com


Schoolyard RC Speedway, Lagrange, Indiana 46761; David W. Bryan, 260-463-3558; email: dwbryan@loci.net; web: www.rcspeedway.net


Showtime Lot Racing, Fort Wayne, Indiana 46819; Mike Romines, (219) 478-6099; web: fortwaynecrpark.tri-pod.com/


Ames Radio Control Speed Assoc., Ames, Iowa 50014; Ryan Davis/Brad Scandrett, 515-231-3813/515-432-0467; email: Davismotorsp@aol.com


Dubuque R/C Speedway, Dubuque, Iowa 52001; Dan Morgan, 563-583-0160


Hobby Haven, Des Moines, Iowa 50322; Rick Marble, (515) 276-8785; web: www.hobbyhaven.com

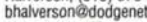

Independence, Independence, Iowa 50644; Eugene Bachman, 319-266-3857; email: BachmanE2@hotmail.com


Iowa City R/C Racing Association, Iowa City, Iowa 52240; Hobby Corner, (319) 338-1788

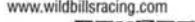

IROAR-Vinton Raceway @ Vinton Roller Rink, Cedar Rapids, Iowa 52402; Ed Karr, 319-362-1291; email: boxkarhobby@aol.com


Manly R/C Club, Manly, Iowa 50456; Bruce Hill, (641) 454-2025


Marble's Raceway, Des Moines, Iowa 50317; Rick Marble, (515) 262-7507


Radio Control Raceway Park, Fort Dodge, Iowa 50501-6746; Bernie Halverson, (515) 576-3780; email: bhalverson@dodgenet.com


RiverFront Speedway, Fort Dodge, Iowa 50501; Bernie Halverson, 515-576-3780 (515-571-1717 Race Day); email: bhalverson@dodgenet.com


Wild Bill's Raceway, Knoxville, Iowa 50138; William Anderson, Jr., 641-842-5973; email: wildbilz@iowatelecom.net; web: www.wildbillsracing.com


Air Capital Hobbies Raceway, Wichita, Kansas 67212, (316) 721-4164


D&B Raceway, Menlo, Kansas; Ron Ball, (785) 855-2370


Coyote Raceway, Lexington, Kentucky 40505; Danny P., 859-253-9900 or 859-253-9330; email: hyperbola01@earthlink.net; web: www.coyotehobbies.com


Dixon's R/C RaceWay, Hazard, Kentucky 41701; Jeff Dixon, (606) 436-4820; email: jeffdr1@hotmail.com

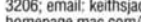

Mayking R/C Speedway, Mayking, Kentucky 41837; Jon Fields, 606-633-4700; email: jon1@se-tel.com


Pit Stop Hobbies, Paducah, Kentucky 42003; Robert or Rodney, 270-443-0052; email: pitstop1@aapex.net

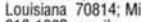

Trio Hobbies & R/C, Radcliff, Kentucky 40160; Maurice Johnson, (502) 351-7547


Wildcat Speedway, Nicholasville, Kentucky; David Bowles, 859-272-0231


Fast Pace Hobbies, Alexandria, Louisiana 71301; Joseph or Casey Toraliba, 318-561-2070; email: fast-pacehobbies@aol.com


Gator R/C Raceway, Moss Bluff, Louisiana 70612; Tony Diaz, 337-855-3206; email: keithsjac@aol.com; web: homepage.mac.com/kmaples/


Hwy. 44 Hobby Shop, Gonzales, Louisiana 70737; Eric Olmstead, (225) 644-1773; email: eric209@aol.com


Red Stick R/C Raceway, Baton Rouge, Louisiana 70814; Michael Pino, 225-218-1002; email: redstickraceway@aol.com; web: www.redstickraceway.com


St. Charles RC Speedway, Destrehan, Louisiana 70047; Al Cazalot, (504)764-0625; email: stcharlesrac-er@home.com; web: members.home.net/stcharlesracer


Central Maine R/C Speedway & Hobbies, Fairfield, Maine 04963; David Prescott, (207) 453-4588; email: rrcracer@mint.net


Clay Bowl R/C Hobbies, Greene, Maine 04236; Pat Cap, (207) 946-5003


Coles Race Way, Waldorf, Maryland 20602; Cole Brincefield, (301)-843-1386; email: kbrincefield@cs.com


GPA Hobbies, Crofton, Maryland 21114, 301-858-0004


The Track, Gaithersburg, Maryland 20877; Mimi Wong, (301) 417-9630; email: mimithe-track@yahoo.com; web: www.rctrack.com

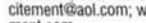

Big Boys Toys, Fall River, Massachusetts 02723; Track Owner, 508-677-9400


East Templeton Model Raceway, Templeton, Massachusetts 01468; Keith Anderson, 1-978-632-1619; email: keith@glowplug.com; web: glowplug.com


Hi-Tech Hobbies, Raynham, Massachusetts; Ruben, (508) 880-5373

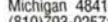

Megadrome Raceway, North Adams, Massachusetts 01247; Bob Blanchette, 413-743-7223


Northboro Speedway, Northboro, Massachusetts 01532; Bob Trimble, 508-393-8087 or 393-2691


R/C Excitement, Inc., Worcester, Massachusetts 01605; Todd Anderson, 508-753-8676; email: rcexcitement@aol.com; web: www.rcexcitement.com


RPM RC Raceway, Abington, Massachusetts 02351-1094; Richard Tonetti, (781) 857-2300; email: hobbtown@AOL.com; web: www.rpmhobbys.com

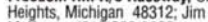

Backyard R/C Raceway, Brown City, Michigan 48416; Tom Jones, (810)793-0257; email: JONES_TNT_2000@YAHOO.COM

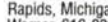

D.R. R/C, Taylor, Michigan 48180; Bobby or Fred, (734) 287-7405; web: www.downriverracing.8k.com


E.U.P., Kincheloe, Michigan 49788; Joel Wiggins, 906-495-3503


Fastraxx, Brownstown, Michigan 48173; Greg Yingling, (734) 379-8980; email: fast33@hotmail.com

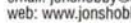

Freedom Hill R/C Raceway, Sterling Heights, Michigan 48312; Jim McKenna, (810)268-3996

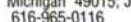

Great Lakes Racers Club, Grand Rapids, Michigan 49588; John Warner, 616-838-2231; email: Gr8LksRacers@aol.com; web: www.rogers.3.com/glrcl/


Hideaway Raceway, Napoleon, Michigan 49201; David Carlisle, 1-517-536-8821; email: adcarlisle1@netscape.net


Jons Hobby, Mt. Pleasant, Michigan 48858; Jon Beutler, (517)773-5412; email: jonshobby@earthlink.net; web: www.jonshobby.com


JT Superspeedway, Battle Creek, Michigan 49015; Jerry or Sam, 616-965-0116


Larry's Performance R/Cs, Commerce, Michigan 48390; Jess or Oppie, 248-926-1140; email: lprcs@qwest.net


Larry's Performance RC Carpet Track, Sterling Heights, Michigan 48314; Larry, 586-997-4840; email: lprcs@qwest.net


Lazer RC Speedway, Adrian, Michigan 49221; Russ Johnson, (517) 263-2806


N.M.R.C.C. Speedway, Gaylord, Michigan 49735; Gabe, (989) 732-3963; email: hobby-toy@voyager.net


R&L Hobbies & Racing, Portage, Michigan 49002; Rex Simpson, (616) 323-3686; web: www.rlhobbies.com


R.A.C.E. Inc., Jackson, Michigan 49203; Sam Sprang, (517) 787-9161


Raw Roots Race Tracks, West Olive, Michigan 49460; Roy Bennink, (616) 399-9338

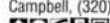

Village Hobbies, Hesperia, Michigan 49421; John Fosdick, 231-854-1374; email: vhracing@triton.net


Village R/C Raceway, Decatur, Michigan 49045; Chuck Nolke, (616) 423-7878

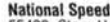

Washtenaw R/C Raceway, Ann Arbor, Michigan 48103; Jim Rousseau, 734-395-5048


Bruce McCullough Memorial R/C Speedway, Cloquet, Minnesota 55720; Howie Port, (218) 879-5174; email: howies_house@hotmail.com


Country R/C Raceway Park, Belview, Minnesota 56214-8115; Charles L. Steffi, 507- 641-8115


J's Radio Control Race Park, Starbuck, Minnesota 56381; Jay Campbell, (320) 239-4827


Kevin's Off-Road Raceway, Crookston, Minnesota 56716-2317; Kevin Altepetter, (218) 281-7523; email: kevin@krcrproducts.com; web: www.krcrproducts.com

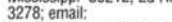

National Speedway, Fridely, Minnesota 55432; Steve Hedenland, 763-571-9283; email: mrtip@nationalhobby.com; web: www.nationalhobby.com


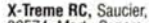
Northwoods Hobby Raceway, Brainerd, Minnesota 56401; John or Doug, (218) 829-9257


Twin Cities Hobby & Raceway, Brooklyn Park, Minnesota 55443; Mark O'Brien, 763-569-5069; email: wooduster@msn.com; web: www.twincityhobby.com


Meridian RC Speedway, Meridian, Mississippi 39302; Joe or Pearce, 601-483-7000


Small Cars Unlimited, Jackson, Mississippi 39212; Ed Hill, 601-372-3278; email: fast@smallcarsunlimited.com; web: www.smallcarsunlimited.com


X-Treme RC, Saucier, Mississippi 39574; Marty Capers, (228) 539-2004


B&L Hobbies & Raceway, Park Hills, Missouri 63061; Bob Marler, (573) 431-9444


Hobbies In Motion Raceway, Springfield, Missouri 65803; Matthew Froning, 417-886-9621; email: MRKID-TURISMO@AOL.com; web: www.gor-c.com


North Missouri Raceway, Chillicothe, Missouri 64601; Billy Johnston, (660) 646-1120


Novelty R/C Raceway & Hobbies, Novelty, Missouri 63460; Rex & Jena Franke, 660-739-4530; email: rex_jena@noveltyrc.com; web: www.noveltyrc.com

Ozarks R/C Raceway, Springfield, Missouri 65803; Gene Rhodes, 417-873-9350 (Track), 417-742-4376 (Home); email: OzarksRaceway@aol.com

RCTRA Racing Club of Central Missouri, Hallsville, Missouri 65255; Gary Phillippe, 573-886-3799 or 573-442-8183; email: gary.phillippe@verizon.com

Real Blue Vue R/C, Kansas City, Missouri 64133; Steve Hale, (816) 358-0238; email: hrealrc@aol.com; web: www.geocities.com/real_rc_raceway

Real R/C Raceway, Pleasant Hill, Missouri 64080; Steve Hale, (816) 540-5584; email: hrealrc@aol.com; web: www.geocities.com/real_rc_raceway

Showtime Speedway, Bakersfield, Missouri; Don Risner, (601) 203-1481

MONTANA

Garden City R/C Speedway, Missoula, Montana 59801; Brian Culp, (406) 549-7992; email: gardencityrc@msn.com

Magic City Racers, Billings, Montana 59102; Bryan Grummett, 406-656-8266; email: jsvaves@tgsolution.net; web: www.magiccityrc.com

RC Offroad Association of Racing (ROAR), Libby, Montana 59923; Jamie, 406-293-6506; email: shark-boyet@hotmail.com

NEBRASKA

Hadar R/C Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

Hobby Town Raceway, Lincoln, Nebraska 68505; Chris or Chad, 402-434-5056; email: eaststore@aol.com

Hobby Town USA Raceway Park, Lincoln, Nebraska 68508; Chad or Chris, 402-434-5056; email: eaststore@aol.com

NESCAR Raceway, Grand Island, Nebraska 68801; Steve Blayney, 308-382-0920; email: spinkgr@nebl.com

O.N.R.O.A.D., Omaha, Nebraska 68104; CoRK Jacobs, (402) 556-8674

OTWG Carpet Raceway, Norfolk, Nebraska 68701; John Schoenauer, (402) 644-7922

The Salvation Army Speedway, Omaha, Nebraska 68164, 402-734-3414

NEVADA

Dansey's Indoor R/C & Hobbies, Las Vegas, Nevada; David Lugo, (702) 453-RACE or (888) 675-8963; web: www.danseys.com

Las Vegas R/C Raceway, Las Vegas, Nevada 89139; Patrick Quinn, 702-365-1396; email: patrickquinn98@lvcn.com; web: www.lasvegascrcraceway.com

T-Rix bikes & R-C shop, Elko, Nevada 89801; Gary Perkins, (775) 777-8804; email: mtmnm14@hotmail.com

NEW HAMPSHIRE

Hilltop RC, Troy, New Hampshire 03465; Pete Bastoni/Jim MacPherson, 603-242-3222; email: hilltoprc@netze-ro.net; web: hilltoprc.homestead.com

Lakes Region R/C Speedway, Gilford, New Hampshire 03246; Louie Blais, 603-524-2909; email: lakeregionrc@homestead.com; web: www.lakesregionrc.homestead.com/home.html

RT 106 Racepark, Pembroke, New Hampshire 03275; David Daniels, 603-224-7223; email: david@collec-tracing.com; web: www.106racepark.com

NEW JERSEY

America's Hobby Center Inc., North Bergen, New Jersey 07047; John Many, (201) 662-0777; web: www.ahc1931.com

Checkerboard Raceways, Elwood, New Jersey 08217; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net

Family Hobbies Raceway, Vineland, New Jersey 08360; Linda Vogel, 856-696-5790; email: familyhobbies@yahoo.com; web: familyhobbies.20m.com

Jackson RC Club, Jackson, New Jersey 08527; Al Sardano, 732-364-6422; email: Tazzyd@optonline.net; web: www.jacksonRC.com

Jefferson Speedway, Oak Ridge, New Jersey 07438; Jim, (973) 697-7525

Millville R/C Oval & Roadcourse, Millville, New Jersey 08332; William Denstow, 856-327-4640

On Trax Hobbies, Browns Mills, New Jersey 08015; Joseph DiGirolamo, (609) 735-0422

Competition Hobby Supplies & Speedway, Cohoes, New York 12047; Howie Cummings, 518-786-3622; email: howard.cummings@verizon.net; web: www.competitionhobby supplies.com

East Coast R/C Hobbies, Brooklyn, New York 11204; John Giangrande, 718-627-3814

Fastraks, Hogsburg, New York 13655; Mark Castonguay, (518) 358-3686; email: froghobb@northnet.org; web: www.fastraks.8m.com

Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718) 641-9001; email: moon-chaserwolf@aol.com

SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org

The Race Place, Farmingdale, New Jersey 07731; John Fary, (908) 938-5215

Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700

PottBellys R/C Speedway, Pitts Grove, New Jersey 08360; Drew Anastasio, 856-875-2132; email: pottbelly@pot-tbellysrc.com; web: www.pottbellysrc.com

South Jersey Cost Controlled Racing, Sicklerville, New Jersey 08081; Ray Murray, 856-629-9413; email: RaysTrack@webtv.net; web: communi-ty.webtv.net/RaysTrack/SouthJerseyCos-t

SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org

The Race Place, Farmingdale, New Jersey 07731; John Fary, (908) 938-5215

Wacky RC Raceway, Roselle, New Jersey 07203; Tony Williams or Kimble Wright, (908) 241-6700

NEW MEXICO

Albuquerque R/C Off-Road Raceway, Albuquerque, New Mexico 87120; Bill Mitchell, (505) 243-0681 (W); 898-6181 (H); email: email-bill@home.com

Big Boys Toys Raceway, Albuquerque, New Mexico 87112; Isaac Garcia, 505-298-1023; email: yoklosi@aol.com; web: www.bigboystoysthestore.com

Speed Zone, clovis, New Mexico 88101; Brad Ferguson, 505 769 1737; email: speedzone@yucca.net

NEW YORK

BarnStormers Raceway, Chester, New York 10918; Lou Sytsma, 845-469-BARN (2276); email: iamysysma@hotmail.com; web: www.barnstormers.0catch.com/

Brennan's RC Hobbies, Vernon, New York; Bill or Tom Brennan, (315) 829-4930

Brooklyn Hobbies, Brooklyn, New York 11234; Chris Palermo, 718-951-2500; email: brooklynhobbies@aol.com; web: www.brooklynhobbies.com

Bruckner Racing, Bronx, New York 10465; Thomas Baffers Sr., (800) 288-8185

C&C Speedway, Binghamton, New York 13903; Eric Boyd, (607) 773-2044

Capital District Radio Controlled Stock Car Club, Loudonville, New York 12211; Peter Willis, (518) 482-7128; email: rcpete12211@yahoo.com; web: cdrcsc/homestead.com

Chipmunk Hill R/C Speedway, Theresa, New York 13691; Ted or Pete House, (315) 628-5065

Competition Hobby Supplies & Speedway, Cohoes, New York 12047; Howie Cummings, 518-786-3622; email: howard.cummings@verizon.net; web: www.competitionhobby supplies.com

East Coast R/C Hobbies, Brooklyn, New York 11204; John Giangrande, 718-627-3814

Fastraks, Hogsburg, New York 13655; Mark Castonguay, (518) 358-3686; email: froghobb@northnet.org; web: www.fastraks.8m.com

Hobby Zone Raceway, Ozone Park, New York 11417; Brian, Sean or Adam, (718) 641-9001; email: moon-chaserwolf@aol.com

SpeedPro Dragway, Elizabeth, New Jersey 07206; Albie Niziolek, 908-351-5080; email: funnycar176@aol.com; web: www.speedpro.org

Lil Wheels Raceway, Oswego, New York 13126; Bill Meyer, 343-6566; email: lilwheelsraceway@hotmail.com; web: lilwheelsraceway.txs.org

Long Island Raceway, Farmingdale, New York 11735; James, (516) 845-7223; web: www.raceway.com

MTW Raceway, Cato, New York 13033; Tim, 888-39-HOBBY; 315-626-2029; email: docsavage@mtwrace-way.com; web: www.mtwraceway.com

PRO Speedway, Cattaraugus, New York 14719; Marc Pritchard, (716) 257-3101

Radio Hill Raceway, Dundee, New York 14837; Bill or Greg, 607-243-8641 (Bill); 607-243-7899 (Greg)

Rampage R/C & Hobbies, Hyde Park, New York 12538; Brian Walker, (845) 229-1379

South Shore Hobby & Raceway, Coram, New York 11727; Benny or Bonnie, 631-696-8500; email: sshobby@northeast.net; web: www.southshorehobby.com

Southern Tier Raceway, Owego, New York 13827; Anita Harding, (607) 687-5395

TARMAC Ultimate R/C Raceways, Poughkeepsie, New York 12603; Todd Plagg, 845-342-5409 (Todd); 845-454-8276 (Track-Sundays); email: toddp@tarmacraceway.com; web: www.tarmacraceway.com

Wall's Hobby, Syracuse, New York 13209; Bruce, 315-453-2291; web: www.walls-hobby.com

Willis Hobbies R/C Speedway, Mineola, New York 11501; Ken Ford, 516-746-3944; web: www.willishob-bies.com

Chatham R/C Raceway, Bear Creek, North Carolina 27207; Dwight Fields, (919) 898-4518; email: chatham_rc_speedway@yahoo.com; web: www.chathamrcspeedway.com

High Speed R/C, Chapel Hill, North Carolina 27514; Tom Gabriel, 919-933-7671; email: chapelhillrc@yahoo.com; web: www.chapelhillrc.com

R.C.R. Speedway, Salisbury, North Carolina 28147; Ronnie Linker, (704) 637-2565

Race City Motor Speedway, Mooresville, North Carolina 28115; Ray Kelly, 704-660-FAST; email: Kellyrcms@cs.com; web: racecitymotorspeedway.com

Rosewood RC Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: gelam49@hotmail.com; web: www.rosewoodrc.com

Sandhills Raceway, Southern Pines, North Carolina; Mike Russel, 910-245-4450; email: mrmrc@mindspring.com; web: www.sandhillsraceway.com

Southern RC Motorsports Club, Shallotte, North Carolina 28459; Eddie Ferster, (910) 754-8528

The Antique Barn, Wilson, North Carolina 27893; Steve, (252) 237-6778; email: antiquebarn@esn.net

Rosewood RC Speedway, Goldsboro, North Carolina 27530; Glenn Elam, 919-734-7754; email: gelam49@hotmail.com; web: www.rosewoodrc.com

NORTH DAKOTA

Grand Forks Remote Control Racers, Grand Forks, North Dakota 58201; Dan Miller, 701-746-9910; email: dand-miller@juno.com; web: mule.puah.org/gfrcr

OHIO

AK Hobby & Raceway, Cincinnati, Ohio 45211; Tim Tolle, (513) 661-7080; email: tim@akhobby.com; web: www.akhobby.com

American Ohio Sprint Car, Wickliffe, Ohio 44092; Gary Waldheim, 440-944-9966; web: www.aosca.8m.com

Black Swamp RC Car Club, Toledo, Ohio 43623; Riders Hobbies, 419-843-2931; email: ridersclub@webtv.net; web: www.blackswampcra.cjb.net

CORCAR/ Sams Club, Galloway, Ohio 43119-8732; Bill Stevenson, (614) 870-7159

D&J R/C Raceway, Orrville, Ohio 44667; Don, (330) 682-4266

DeFosse Raceway, Ripley, Ohio; Greg DeFosse, (937) 377-2063

Extreme RC Raceway, Wheelersburg, Ohio; Kevin Rowe, (740) 574-4190; email: extremerc2000@yahoo.com; web: www.ohioxcrc.com

Hobbyland Raceway, Proctorville, Ohio 45669; Craig Harber, 740-886-0502 or 740-886-062; email: pitrow-eracing@webtv.net; web: hobbylan-draceway.homestead.com

Medina R/C Raceway, Medina, Ohio 44256; Mr. Bill, 330-723-0255; email: mr.bill@nls.net

Mid Ohio Dirt Oval, Lexington, Ohio 44904; D&D Hobby Center, (419) 884-0001

Nothing But Air R.C. Track, Logan, Ohio 43138; Gary Lloyd, 740-385-0288

Ohio Valley Off Road R/C Raceway, Jerusalem, Ohio 43747; Kevin Wilson, (740) 926-1738; email: consol@1st.net; web: www.ovor.8m.com

Outlaw Speedway, Lexington, Ohio; Eric Radio, 419-884-0001; email: kramercj@aol.com; web: rcdirtoval.freemovers.com

River Rat Racing, Ripley, Ohio 45167; Jon Faris, 937-392-9298; email: honey3@bright.net; web: www.rivera-traceway (under construction)

T.S.R.C.A.R., Hamilton, Ohio 45011; Dennis Young, (513) 367-5634; email: scaleracr@aol.com; web: www.tri-staterautoracers.com

TARCAR, Toledo, Ohio 43617; Bill Bridges, (419) 826-3859

Ultra Racing R/C Hobby and Track, Hamilton, Ohio 45015; Ed Lewis, 513-863-7342; email: UltraRacing@aol.com; web: www.rcaronline.com

Van Wert R/C Raceway, Van Wert, Ohio 45891; Mark Davis, (419) 232-2112

Y-City Hobby & Speedway, Zanesville, Ohio 43701; Kevin McKenna, (740) 455-3025; email: Kevin@ycity-hobby.com; web: www.ycityhobby.com

KEY TO SYMBOLS

- Indoor
- Outdoor
- Off-road
- On-road
- Oval
- Dirt oval
- Carpet

- Concrete
- Asphalt
- Minis & Micros
- On-site hobby shop
- AC power
- Auto lap counting
- Food available

OKLAHOMA

Action Hobbies, Tulsa, Oklahoma 74145; David Cole, (918)663-8998; email: acthobi@aol.com

Action RC Speedway, Oklahoma City, Oklahoma 73135; Jerry Hawthorne, (405) 670-7770; email: ginnat@flash.net; web: www.actionrc.com

Adams Creek R/C Speedway, Broken Arrow, Oklahoma 74014; John Beighle, (918) 355-1416

Competition R/C, Oklahoma City, Oklahoma 73149; James or Louise Brown, (405) 634-0809; email: com-prc1@aol.com

Enid R/C Speedway, Enid, Oklahoma 73703; Darin Pendleton, (580) 554-9400; email: darin@enid.com; web: www.enidrcracing.com

HobbyTown USA, Norman, Oklahoma 73072; Todd Jensen, (405) 292-5850

Wings N Things Raceway, Tulsa, Oklahoma 74105; Heath Anderson, (918) 745-0007

OREGON

Competition Racing Association, Portland, Oregon 97230; Mark Taylor, (503) 761-1334; email: crajodi@qwest.net or cramar@qwest.net; web: home.attbl.com/~cra/

Dirt City RC, Albany, Oregon 97321; Doug Vertrees, (541) 791-1089; email: quicktemperr@aol.com

R/C Plus Hobbies Raceway, Salem, Oregon 97302; Ron Smith, (503) 364-9188; email: rcpus@rcplus.com; web: www.rcplus.com

R/C Speed Center, Medford, Oregon 97501; Gene & Betty Jean Skelton, 541-779-8298

Rose City Scale Racing, Milwaukie, Oregon 97222; Rick Strauss, (503) 631-2929; web: www.rc-cars.com

PENNSYLVANIA

Bumps & Jumps RC Speedway, Middletown, Pennsylvania 17057; Chris McKinney, 717-728-4613; email: chrismc@bigfoot.com; web: www.bumpsandjumps.com

Courtview Raceway, Washington, Pennsylvania 15301; Aaron Stimmel Jr., (724) 225-0398

DC Ultra Trax, Warminster, Pennsylvania 18974; David Cowan, (215) 672-5200; web: www.jrchobbies.com

Dreamboat Hobbies, Warren, Pennsylvania 16365; Louie Dussia, (814) 723-8052; email: dreamboat77@yahoo.com

J&K Hobbies and Raceway, Jersey Shore, Pennsylvania 17740; Jason Corfer or Kevin Casbeer, 570-398-8171; email: rcmaniac01@msn.com

Kranzel's R/C Raceway & Hobbies, Lemoyne, Pennsylvania 17043; David or Stuart Kranzel, (717) 737-7223; web: www.kranzelsrchoobbies.com

Little Plum R/C Hobbies, Lock Haven, Pennsylvania 17745; Larry Duck, (570) 769-1984

Marshall's R/C Raceway, Honesdale, Pennsylvania 18431; Bill or Dot Marshall, (570) 729-7458

McCullough's Offroad, Sarver, Pennsylvania 16055; Doug McCullough, (724) 352-0116; email: DMCCull323@aol.com

Newville RC Speedway & Hobbies, Newville, Pennsylvania 17241; Randy or Mike, 717-776-5568; email: newvillercspeedway@yahoo.com; web: www.newvillercspeedway.com

Pit Stop Hobbies, Mount Joy, Pennsylvania 17552; (717) 653-6222; email: pitstophobbies@pitstophobbies.net; web: www.pitstophobbies.net

Racers Edge R/C Racing & Hobbies, Smethport, Pennsylvania 16749; Rick Morgan or Johna Simar, (814) 887-9256; email: racersedgerc@mindspring.com; web: www.racersedgerc.com

RB Motorsports & Hobby, Northumberland, Pennsylvania 17857; Rick Bunting, (570) 473-8711

RC Avenue II, Bradenville, Pennsylvania 15650; Chris Deryan, 724-537-9592; email: 12ss@msn.com

RC Dirtburners Club, Windber, Pennsylvania 15963; Bruce Schmidt, (814) 266-4118; email: rckidd1@cs.com

RC Outfitters RCO Raceway, Hanover, Pennsylvania 17331; Chris Shaffer, (717) 633-9490; web: www.rcohobbies.com

Riverside Raceway, Warren, Pennsylvania 16365; Jeff, (814) 723-4211

Staub Bros. R/C Speedway, Gettysburg, Pennsylvania 17325; Todd or Scott Staub, 717-334-8488; web: www.staubbrothers.com

The Hobby Depot, Malvern, Pennsylvania 19320; Chris McGovern, 610-725-8317

The Raceway at River Junction, Beaver, Pennsylvania 15009; Sam or John, (724) 728-5571; email: river-jct@stargate.net

Thunder Hobbies Raceway, Indiana, Pennsylvania 15701; Brent or Lori Marshall, (724)349-2639; email: thunderhobbies@hotmail.com

Track 84, Narran, Pennsylvania 17555; Andrew Flexer, (717) 354-6503

Trains & Lanes Raceway, Easton, Pennsylvania 18045; Jeff Setzer, (610) 253-8850 or (800) 447-4891; email: trainslanes@aol.com

TRP, Kingston, Pennsylvania 18704; Rob Yeager, 570-283-3066; email: rrcob99@aol.com

WillCam Raceway, Punxsutawney, Pennsylvania 15767; James Campbell, (814) 939-4251

PUERTO RICO

Bayamon R/C Park, Bayamon, Puerto Rico 00956; Damian Cruz & Javier Rivera, (787) 869-8092 & 401-2770; email: damian@bayamonrcpark.com; web: www.bayamonrcpark.com

Hacienda Muñoz R/C Track, Juana Diaz, Puerto Rico 00795, (809) 837-7083

Hi-Speed C Raceways, San Juan, Puerto Rico 00926; Carlos Ortiz, (787) 283-0198; email: hispeed@hotmail.com; web: www.hispeedhobby.com

Mech Tech Touring Park, Caguas, Puerto Rico 00725; Humbert (Tito) Lizardi, (787) 739-1572; email: titzar-di@hotmail.com

Tropical Raceway Track, Manati, Puerto Rico 00674; Hector Pabon/George Pabon, (787)854-8884 or (787)884-9294; email: trophobbi@coqui.net

RHODE ISLAND

Insane Toys RC race track, Providence, Rhode Island 02909; Jose Jimenez, (401) 421-8878; email: Havokt@aol.com; web: members.home.net/havokt/

SK Hobbies Inc., Johnston, Rhode Island 02919; Slim or Keith, (401) 453-1440

SOUTH CAROLINA

Atomic Racers, Aiken, South Carolina 29803; Bill Jackson, 706-855-0846 or 803-725-1664

Carolina R/C Speedway, Easley, South Carolina 29640; David, 864-295-1209; email: cprahlrc@mindspring.com; web: www.carolinarc.com

D&S Hobbies R/C Track, Hartsville, South Carolina 29550; Don Dietz, 843-383-0017; email: dshobbydon@aol.com; web: www.dshobbies.com

Darlington R/C Raceway at Hobbies & More, Darlington, South Carolina 29532; Jerry Pollard, (843) 393-0355; web: www.hobbiesmore.com

Hi Voltage Raceway, Anderson, South Carolina 29625; Whitner Bowen, 1-864-225-8680; email: Jahilion247@aol.com

The Grove Racing Center, Rockhill, South Carolina 29730; Don Faris, (803) 327-4121

SOUTH DAKOTA

Action R/C Raceway, Mitchell, South Dakota 57301; Royal or Roger, Royal-day-605-996-9871; Roger-eve-605-996-2897; email: pioneer@santel.net

Boomerans Raceway, Hartford, South Dakota 57033; Ed Smithback, (605) 528-7345

Dakota Off-Road Racers, Aberdeen, South Dakota 57401; Kevin, 605-225-5223

Grassland Racers, Black Hawk, South Dakota 57718; Ryan Logan, 605) 787-5632

SBK, Winner, South Dakota 57580; Broc Stout, (605) 842-2699

TENNESSEE

Hobby Town USA, Franklin, Tennessee 37067; Bobby Mills, (615) 771-7441; email: htu126@aol.com

MSA R/C Racing, Crossville, Tennessee 38555; D.R. Findley, (931) 456-0027

Need For Speed Raceway R/C, Chattanooga, Tennessee 37415; Ronnie Cox, (423) 876-9019

RC Speedway, Cleveland, Tennessee 37323; James Morgan, 423-472-7854 or 645-5771; email: jmorga59@bell-south.net

Robertson's R/C Raceway, Jackson, Tennessee 38301; Travis Robertson, 731-423-6984; email: RobertsonsRC@aol.com

SpeedZone Raceway & R/C Hobbies, Sweetwater, Tennessee 37874; Mike Henderson, 423-351-0055; email: speedzon@msn.com; web: www.speedzonraceway.com

W.O.W. Raceway, Beech Bluff, Tennessee 38313; Brad Jones, 731-216-2625; email: wowracer@bell-south.net; web: go.to/wowracing

TEXAS

215 Speedway, Abilene, Texas 79602; Clyde Gardner, (915) 673-2351

Austex RC, Austin, Texas 78757; Michael, 512-458-2324; web: www.austexrc.com

B&B R/C Hobbies, Big Spring, Texas 79720; Walter Bumbulis, (915) 263-1790; email: b&brchobbies@apex2000.net

Big Mike's R/C Raceway, Longview, Texas 75604; Mike Sumrow, 903-297-7814

Drycreek Raceway, Greenville, Texas 75402; Micky Alphin, 903-527-5381; web: www.pulse.net/drycreek

Finishline Raceway, Hurst, Texas 76053; Damon Darnall, (972) 404-0463; email: Finishline@ev1.net; web: www.finishlinetrack.com

Hal's Hobby Raceway, El Paso, Texas 79936, (915) 591-2213; web: www.halshobbywarehouse.com

Hobby Center Race Track, Houston, Texas 77598; Issac Ben-Ezra, 281-488-8697; email: Hobbycenter@issac-smodels.com; web: www.hobbycenter.cc

Hobbytown USA, San Antonio, Texas 78209; Clark, (210) 829-8697; fax (210) 829-8707

Indy R/C World, Garland, Texas 75041; Steve Webster, (972) 271-4844; fax (972) 271-4502; web: www.indyrcworld.net

Js Action R/C, Pasadena, Texas 77503; Jack Williams, 713-946-8888; email: jayactionrc.net; web: www.jsactionrc.com

K&M Racing, New Caney, Texas 77357; Brent Mahaffy, (281) 399-9777

M&M Hobby Center, Bellaire, Texas 77401; Meir Ben-Ezra, 713-661-7137; email: mandm@mmhobby.com; web: www.mmhobby.com

MBRC, Dallas, Texas 75093; Mike Battle; email: info@mbrc-racing.com; web: www.mbrc-racing.com

Mike's Hobby Shop Superstore & Raceway, Carrollton, Texas 75006, 972-242-4930; web: www.mikeshobbyshop.com

Reflex R/C, Houston, Texas 77055; Joseph Chen, (713) 464-4458; web: www.reflexrc.com

T&M Raceway R/C Drag Racing, Addison, Texas 75244; Marvin Jackson, (972) 416-0445; email: mjackson@tmraceway.com; web: www.tmraceway.com

T&T R/C Cars, Plano, Texas 75024; Joe Sullivan, (972) 633-2470

The Rollcage, Greenville, Texas 75402; Guy Allen, (903) 883-0332; email: rollcage2000@therollcage.com; web: www.therollcage.com

Thompsons RC Raceway, Lufkin, Texas 75901; Mark Thompson, (936) 637-0093

W.E.S. Hobby Race, Beaumont, Texas 77701; Marty Walker, (409) 839-4929

X-Treme Hobbies, Round Rock, Texas 78664; Jef Santos, (512) 310-0444 or (512) 388-3819

UTAH

Hobbie Stop Raceway, Riverdale, Utah; Todd Hamilton or Beazer Martin, (801) 622-0841

Intermountain R/C Raceway, Magna, Utah 84044; David Mott, 801-250-8303; email: rcmother1@aol.com; web: members.aol.com/rcmother1

Outback Raceway, Ogden, Utah 84404; Steve Brown or Beazer Martin, 801-726-3458; email: Steve@rmrcr.com or Beazer@bibbs.com; web: www.rmrcr.com or www.beazershobbies.com

Vision Hobby, Orem, Utah 84057; Ken Rice, (801) 226-6226

VERMONT

Empire Hobbies Off-Road Raceway, Saint Albans, Vermont 05478; Scott or Jen, 877-446-2243; email: empirehobbies@surfglobal.net; web: www.vtwebs.com/empire-hobbies

R/C Toy Box Hobbies & Tracks LLC, East Haven, Vermont 05837; Raymond Richard, 802-467-8458; email: rctoybox@excite.com; web: myrctoybox.50megs.com

VIRGINIA

Brad's Hobbies, Staunton, Virginia 24401; Brad, (540) 885-3642; email: bradshobbies@rica.net

Brown Brothers Hobbies, Dumfries, Virginia 22026; Joe or Bob Brown, 703-221-5746; email: joe@bbhobbies.com; web: www.bbhobbies.com

DRWC Raceway, Virginia Beach, Virginia 23454; Les Modlin, 757-340-6681; web: www.debbiesrcworld.com

Hampton RC Speedway, Hampton, Virginia 23663; Steve or Bill, (757) 723-1884

Hampton Roads R/C Drag Club, Virginia Beach, Virginia 23452; Garry Nelson, 757-399-8645; email: Garry@gsdragracing.com; web: www.HRRCC.com

KC's Radio Control & Repair, Lynchburg, Virginia 24503; Curtis or Kim Wright, (804) 384-8596

Linville Hobbies Raceway, Linville, Virginia 22834; Jerry Shenk, (540)833-2222; email: linvillehobbies@juno.com; web: www.linvillehobbies.com

Olde Towne Hobby Shoppe, Manassas, Virginia 20110; Jeff Gough, (703) 369-1197; web: www.oldtownehobby.com

Roanoke R/C Club, Salem, Virginia
24153; Chad Trent, 540-314-6257;
email: roanokerc@aol.com;
web: roanokerc.cjb.net



Shamrock Raceway, Winchester,
Virginia 22601; Denise Fletcher, 540-
869-4162



Stream Hobby Shop, Newport News,
Virginia 23605; Rusty Kennedy, 757-
591-0720; email: streamrc@aol.com;
web: streamhobbyshop.com



The Tiltyard, Dayton, Virginia 22821;
Homer, 540-828-3476; email:
homer@tiltyard.com; web: www.tilt-
yard.com



Thunder Road RC Speedway,
Gordonsville, Virginia 22947; Robert
Bingler, (804) 296-6549; email:
rwb3y@virginia.edu; web: www.thun-
derroadrc.com



WASHINGTON

A-Main Raceway, Vancouver,
Washington 98685; Monty Coleman,
(360) 571-8404; web: www.ainmainrace-
way.com



Burien Toyota R/C, Seattle,
Washington 98148; Ray Meek,
(800) 654-6456



Cedardale Raceway, Mount Vernon,
Washington 98273; Craig, 360-755-
9464



Fantasy World Raceway, Tacoma,
Washington 98408; Dave Kleinman,
(253) 473-6223; web: www.fantasy-
worldhobbies.com



Four Season R/C Racing, Olympia,
Washington 98506; Gary and Sharon
Brown, (360) 491-2430



Hank Perry Raceway, Spokane,
Washington 99023; Hal Hudson,
509-879-3503; email:
halshudson@msn.com



HobbyTown USA, Tacoma, Washington
98408; HobbyTown USA Shop, (253)
474-7787



HobbyTown USA, Lynnwood,
Washington 98037; Rich or Jamie,
425-774-0819; email: RHOB-
TOWN@AOL.COM



Paradise Raceway and Hobbies,
Spokane, Washington 99207; Mark,
509-483-1843; email: paradiserc@hot-
mail.com; web:
www.websellers.com/paradise



Race City, Auburn, Washington
98002; Bruce, (253) 939-2515; email:
auburn@pacifier.com



Rain City RC Raceway, Mukilteo,
Washington 98021; Pete or Debbie
Cartwright, 425-438-2454; email:
info@raincityraceway.com; web:
www.raincityraceway.com



Redmond Hobbies Raceway,
Redmond, Washington 98052; Stan
Ng, (425) 885-3639; email: info@red-
mondhobbies.com; web: redmondhob-
bies.com



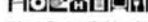
Schmidt's Auto Parts, Marysville,
Washington 98271; Jon Failla, (360)
653-8838; web: www.schmidtsracer-
way.com



Spokane Indoor Raceway, Spokane,
Washington 99212; Brian Batch, 509-
487-2122



Tacoma R/C Raceway, Tacoma,
Washington 98406; Scott Brown,
(253) 565-1935;
web: www.tacomarcaceway.com



West Coast Hobby & Raceway,
Richland, Washington 99352; Darren
Shank, (509) 375-4995



WEST VIRGINIA

Burr Fab R.C. Raceway, West Union,
West Virginia 26456; Mark Travis,
304-673-2487; email:
burrhouse1@cs.com



Fulton's R/C Raceway, Wheeling, West
Virginia 26003; James Fulton,
(304) 233-5355



Mountwood Raceway, Waverly, West
Virginia 26184; Ryan Taylor, (304)
295-3217; email: ryan@ovrccc.com;
web: www.ovrccc.com



Quiet Dell Raceway, Fairmont, West
Virginia 26554; Daris, (304) 366-
1441; email: Tateracing@aol.com



WISCONSIN

ABC R/C Inc & Raceway, Waukesha,
Wisconsin 53186; Dick Mathiesen,
262-542-1245; email: Help@abcrchob-
by.com; web: www.abcrchobby.com



Best's Hobbies, Appleton, Wisconsin
54914; Peggy, 920-734-5244;
email: appletonrc@hotmail.com;
web: www.besthobbies.com



Gary's Hobby Center, Racine,
Wisconsin 53403; Bill Phalen,
262-554-8884



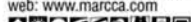
**Hobbytown USA - Revolution
Raceway**, Sheboygan, Wisconsin
53081; Kenny, (920) 452-0801;
web: www.hobbytownsheb.com



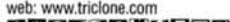
KDM Raceway, Abbottsford, Wisconsin
54405; Kevin Michlig, 715-223-4414;
email: kdmhobby@pcpro.net; web:
kdmhobby.homestead.com/kdmhob-
by.html



MARCCA Raceways, Monticello,
Wisconsin 53570, 608-243-1778;
email: asylumrc@yahoo.com;
web: www.marcca.com



**Mid-West Tri-Clone/Tri-Clone
OffRoad**, West Bend, Wisconsin
53095; Dave Hilpert, 262-334-0429 or
262-626-2238; email:
mwrc@hnet.com;
web: www.triclone.com



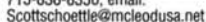
Pro-Star Racing, Green Bay,
Wisconsin 54301; Chuck or Terry,
(920) 494-1233 or (920) 469-5566



**S&N's Trackside Hobbies and
Raceway**, Milwaukee, Wisconsin
53005; Scott Ernst, 262-783-4699;
email: semst@trackside.com; web:
www.trackside.com



The Shorthalf Raceway, Eau Claire,
Wisconsin 54701; Scott Schoettel,
715-838-8350; email:
Scottschoettel@mcleodusa.net



WYOMING

Xtreme Hobbies Raceway, Gillette,
Wyoming 82718; Krieg Balls, 307-
682-6077; email: xtreme@vnc.com

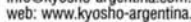


ARGENTINA

Circito R/C Lobos, Lobos, Buenos
Aires 7240; Rupert Bruce, 54-02227-
422905; email: rlobos@yahoo.com;
web: www.rlobos.8m.com



Circuit M.R. Models, Buenos Aires
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4557 1000, fax 4780 1677; email:
info@kyosho-argentina.com.ar;
web: www.kyosho-argentina.com.ar



Club A. Velez Sarsfield, Buenos Aires;
Jorge Herrero, 54-01-658-5851



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Wanniasa, ACT; Gary Davey,
61-6-2871411



A.C.T. Remote Control Car Club,
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61-2-6231-9925; email:
bjorgo@isr.gov.au; web: users.big-
pond.net.au/gr/actrccc.html



Aubry R/C Car Club, Aubry, New South
Wales 2640; Ron Langman,
060-247-128



Brisbane Dirt Racing, Brisbane,
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email: smeg666@bigpond.com;
web: www.gofast.to/race



Canberra Off-Road Model Car Club,
Narrabundah, ACT 2604; Graham
Brown, 61-6-241-3070



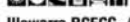
Carine R/C Model Car Club, Inc.,
Greenwood, Western Australia; David
Werner, 61-418922966



**Castle Hill Radio Control Off Road Car
Club**, Castle Hill, New South Wales
2754; Peter Ellis, 0412 257 353; email:
chrccrcc@nextcentury.com.au; web:
www2.nextcentury.com.au/chrccrcc



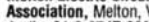
Central Coast ORRCC, Bateau Bay,
New South Wales 2261; Peter J.
Knight, 61-43-693-698



Illawarra RCECC, Albion Park Rail,
New South Wales 2527; Mel or
Andrew, 042-714-683



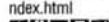
Lakeside R/C Racing Car Club,
Lansvale, New South Wales 2166; R.
Bartolozzi, 62-2-907-9800



**Melton Electric Circuit Car
Association**, Melton, VIC 3337; Arthur
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index.html



NSW Indoor R/C Raceway, Hurstville,
Sydney 2220; Anthony Lee or Walter
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Penfield Park, Adelaide, South
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Walesorh, (618) 8289-5010



R.C. Speedway, Newcastle, New
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**TFTR - Templestowe Flat Track
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Wee Waa's Offroad RC, Burren
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Shane, 61-02-6796-1339



Wodonga R/C Car Club, Wodonga, VIC
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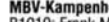
BARBADOS, WEST INDIES

**R.O.A.R. (Radio Operated Auto
Racing)**, St. Michael; Marva Clarke,
(246) 427-3907



BELGIUM

ATR-Alka-Tele-Racing, Limburg;
Alken, 0032-11-25-49-03



MBV-Kampenhout, Kampenhout
B1910; Frank Mostrey, 0-16-65-75-18



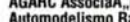
**Model Racing Club Oudenaarde
(MRCO)**, 9700 Oudenaarde; Nicky
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email: mrcracing@hotmail.com;
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379685



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**AGARC Associaçao de Goiania de
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Electric Car Club R/C Santos, Santos,
Sao Paulo 11065-001; Estevam or
Arnaldo, 55-013-232-2536



Hobby Center, Brasilia, DF 70.273,
061-242-0488



Hobby Planet Racing Club, Campinas,
Sao Paulo 13091901; Daniel, Helio,
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Jungle Drive, Rio de Janeiro, PB
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Off Roaders, Sao Paulo, CEP 05640;
Waldir Ielpo, (055) 011-260-5628;
fax (055) 011-831-4931

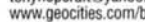


CANADA

ATN, Saint-Jean-Baptiste-de-Nicolet,
Quebec J3T 1E5; Louis Durand, (819)
293-6097; email: durand@sogetel.net;
web: public.sogetel.net/ldurand/



Battlefield R/C Raceway, Cobourg,
Ontario K9A 2G3; Tony Hopcraft,
(905)373-8373; email:
tonyhopcra@yahoo.com; web:
www.geocities.com/battlefield_rc_race-
way/



C.A.R.C.A.R., Calgary; Simon Smith,
(403) 280-9040; web:
www.drive.to/carcar



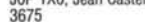
Cactus Speedway, Ruthven, Ontario
N0P 2G0; Terry Torell, (519) 735-7122;
email: osthunder@sympatico.ca;
web: www.mnsi.net/~glenn/sparc.htm



Cam R/C, Coquitlam, British Columbia
V3E 1K9; Roger Brown, 604-945-3888



Circuit J.C., St. Polycarpe, Quebec
J0P 1X0; Jean Castellan, 450-265-
3675



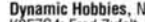
Circuit Teleguide ST Roch, ST Roch
De L' Achigan, Quebec J0K 3H0;
Gerald Beauchamp, 450-588-4254;
email: gedoroam@colba.net;
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Copetown Raceway, Copetown,
Ontario; Adam Filipowicz; email:
adamfilip@home.com; web: copetown-
raceway.8k.com



Dynamic Hobbies, Nepean, Ontario
K2E7S4; Fred Zufelt, (613) 225-9634;
web: www.members.home.net/rcot-
tawa



HobbyHobby P.L.R.C., Mississauga,
Ontario L5M 1K8; Tom Bakonyi, 905-
858-7978; email:
Info@hobbyhobby.com; web:
www.hobbyhobby.com



Honda House Motor Speedway,
Chatham, Ontario N7M 1P9; John
Elliot, (519) 354-5530



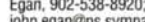
IROCC, Victoria, British Columbia V9B
5W9; Daryl Jones, (250) 478-8013;
email: djoness@shaw.ca



Johns Jump & Grind R/C Track,
Waterville, Nova Scotia B0P 1V0; John
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J-T International Raceway, Nananee,
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Kays Hobbies R/C Raceway,
Moorefield, Ontario N0G 2K0; Doug
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Mid-Canada R/C Auto Racing, Winnipeg, Manitoba R2J 4E6; Jason McBride, 204-231-3324; email: hjmcb@escape.ca; web: www.geocities.com/midcanadarcautoracing

Miniatures & Passions, Ste. Therese, Quebec J7E 2B4; Gilles Lachance, (450) 979-7989

Mini-Z Hobby Shop, Markham, Ontario L3R 0W4; Brian Pong, (905)940-0898; email: info@minizhobbyshop.com; web: www.minizhobbyshop.com

Prince George Radio Controlled Car Club, Prince George, British Columbia V2M 5R9; Doug Waller, 250-561-0035

R/C Champ Raceway, Scarborough, Ontario M1H 3A4; Ben, Matthew or Louie, (416) 289-8717; web: www.rchampraceway.com

R/C Fanatic, Charlesbourg, Quebec G1G 3Y4; Marc Page (Club President), 418-265-2678; email: info@rcfanatic.com; web: www.rcfanatic.com

Recreation R/C Raceway, Prince George, British Columbia; Doug Waller, (604) 561-0035

Steeltown Speedway, Binbrook, Ontario L0R 1C0; Trevor Harrison, 905-692-3407 (ask for Trevor); email: the_prodigy@znetonebox.com; web: www.geocities.com/s_speedway

Sudbury Ontario Auto Racing, Val Caron, Ontario P3E 1E6; Brad Peacock, 705-897-1435 (Brad); email: brad@brendakyle.com; web: www.whelshpines.co.uk

The All New R.C. World, Hamilton, Ontario L0R 1W0; Dave, Larry or Brian, (905) 765-2301 or (905) 333-3297

Vancouver R/C Road Racers, Coquitlam, British Columbia V3E 1K9; Roger Brown, (604) 945-3888

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Nico Prohens Off/On Roaders, Ovalle, 4 Region 1; Nicolas Prohens, (56) 53-711579; email: nprohens@telcelchile.net; web: 38939070.home.icq.com/

OFF/ON ROADERS, Santiago, Region Metropolitana 1; Mauricio Wetter Ferrer, (56)09-8404174; email: mwetter@telcelchile.net; web: 38939070.home.icq.com/

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Club De Automodelismo Colombiano, Sanatafe De Bogota D.C., Bogota; Jorge Delgado, 1-6130588

Garoso Raceway, Cucuta; Gabriel Rodriguez, 975-751892

COSTA RICA

Club de Automodelismo RC10 Costa Rica, San Jose, San Jose; Osvaldo Averhoff A, (506)2862353; email: nitro-cr@hotmail.com

Hobbymania, Hispanidad San Pedro, Montes de Oca; Randall Jimenez, 506-280-9078; email: hobbymanias-tore@hotmail.com; web: www.hobbymanias.com

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Racing Model Club, Nicosia; Andrea Sotiriou, 493186; fax 493229

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Brondby Motor Club, Brondby 2605; Soren Boy Holst, 45-36-472-462

Holstebro R/C Buggy Club, Holstebro 2600; Michael Brusholt, 45-97-412-734

Klub 144 Raceway, Lyngby 2800; Henrik Carstens, 45-42-88-3691

Rainbow Raceway, Copenhagen 2600; P. Christiansen, 45-52-848-504

Thor Minirace Odense, Odense N 5240; Ulrich Rasmussen, 45-65-303-707

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Adoca R/C Speedway, Santo Domingo, (809) 220-5266

La Barranquita R/C International Speedway, Santiago, (809) 582-2303

ENGLAND

Chessington Radio Car Club, Worcester Park, Surrey; Ian Spiller, 0252-20657

Hampshire Racing Center, Basingstoke, Hampshire; Tony Eudola, 44-1276-61402

Hinckley R/C Club, Hinckley, Leicestershire; Bruce, 01455-890580

Snetterton Market Model Car Club, Norwich, Hampshire NR16 2JU; Lee Shore, 01760 724857; email: kekezza@fsmail.net; web: www.wheelspins.co.uk

Worcester Model Car Club, St. John's, Worcester WR2 6Q9; Mr. Hardy

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Auto Electron, Limoges 87000; M. Boudoul, 55 062763

Auto Model Club de l'ouest, Lojehet 29470; Peuziat Michel, 98071764

Crame Roncq, Mons el Baroeul; Michael Hondokyn, 33-20042755

CSRM, Lyon 69009; Pierre-Yves Monfroy, 06 78880852

Lorgies Bolides, Lorgies 62840; Hourdequin Sabine

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Dreykorn Raceway, Lauf 91207; Hermann Hensel, 09123-81457

MAC Zweibruecken, Hueffler 66909; Matthew Bailey, 011-49-6384-1388; email: matthew_w_bailey@hotmail.com; web: www.geocities.com/matthew_w_bailey

MC Köln, Worringer 50769; Ralf Habel, 02733-477493

Mini Car Club Dortmund, Dortmund 4600; Roland Schwan, 0231/213609

Oberhausen-Altstaden, Oberhausen 46099; Josef Holl, 0208-403676

Panik Raceway, Troisdorf 53844; Guido Kraft, 0224-400259

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Autodromo Accion, San Pedro Sula; Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-0261

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H.K.R.C. Model Car Racing Club, Hong Kong; Alex Chan, (852) 659-2822

Kingsville Buggy Arena, Shatin; Pak Yeung, (852) 607-0828

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Ancol, Jakarta. ACT 14350; Andre Supriyana, 62 21 6506040; email: andre@cbn.net.id; web: www.aunis.com/ja

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Pondok Cabecircuit, J.L. Kunir No. 83, Jakarta; Ali Agus Salim, 7403568-9; fax 7491533

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Iroca Off-Road, Rahanana; Yaron Zafiris, (972) 030549937

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Xiwakuni R/C Track, FPO AP 96310-0978; David T. Eck, 81-6117-53-3662

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Zama Off-Road Raceway, APO AP 96338; Ken Campbell, 81-3117-63-8478

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Inferno DX 4WD Track, Ahadi 61002; Yousuf Acqatari

LEBANON

Wild Willy RCC, Beirut, 00961-4-403751

MALAYSIA

ACME SPEEDWAY, Georgetown, Penang, PB 10000; MOEY CHEE CHEONG, 604-2613175 & 6012-4189388; email: s_jamm@hotmail.com

Jump Square Arena, Selanhor; Thomson Chong, (603) 656-2513

Niko Sales & Service Centre, Johor Bahru; Niko Cheng, (607) 234-3615; email: niko3@pd.jaring.my; web: www.niko.com.my

Titivangsa Raceway, Kuala Lumpur; R.A.C.E. Sdn Bhd., 03-2614496

TP Racing R/C Raceway, Selangor; WONG SOO WEI, +603 56388160; email: wong@tp-racing.com

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Alces Off Road, Ensenada, BC 22830; Jorge Bustamante, 667-6-1476, 61477, 86729

Baja JR, Guadalajara, Jalisco 45000; Memo, Pancho, 33-3671-5432/33-3832-0155; email: baja_jr@hotmail.com

Cinamo Coca-Cola, Guadalupe, Nuevo Leon 67120; Sergio Garza, 83- 35-70-0979-32-33

Club Kyosho de Automodelismo Departino, Mexico, D.F. 04330; Jorge Perez Holder, 525-5689-4150; fax 525-5544-7133; email: spedshop@data.net.mx

Desestreza Racing Club, Aguascalientes, Aguascalientes; Luis Lopez, 44 98 961296; email: luis_lopez@jabil.com

Hobby Centro, Guadalajara, JAL 45550; Alejandro Ortiz Del Toro, 36-21-46-28

Hobby Model's Raceway, Morelia, Michoacan 58260, 431-5-01-22

Hobby's Formula, DF 01120, 905-502-3620

Jaguar R/C Club, Puebla 72150; Denise or Chiro, 22-31-00-91, 22-33-00-94

La Hielera, Queretaro, QRO 76160; Jorge Morelos Rabell, 42-12-15-25

Micromotori Club, Jalisco, Jalisco 44640; Francisco Ortiz Sevilla, 52-36418672; email: fstmry@hotmail.com

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R/C Racing Club, Zapopan, Jalisco 44560; Fernando Hernandez, 3-616-73-47

Tony's Track, Culic-n, Sinaloa; Guillermo Prieto, 67-165708-168141

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ERCE Eindhoven, Eindhoven, ACT 5627in; Henk Kik, 040-2480607; email: info@erceracing.nl; web: www.erceracing.nl

H.F.C.C. Hollandia, The Hague; G. de Jong, 031-070-3679820

M.A.C. Vlymen, Nieuwkuijk; Arjan van de Graaf, 31-416-376298

R.C.T.D. Circuit, Dordrecht, Zuid Holland 3316 GN; Jan van Kooy, 31-78-618-11-84; email: pkracing@bit.nl; web: www.pkracing.nl

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Counties R/C Raceway, Pukekohe; R. Northcott, 09-23-86904

Harewood Radio Control Car Club, Christ Church; Dean Johnson, 09-0-3880 344

Papakura Indoor R/C Car Club, Auckland; Colin Perry, 09-298-4711

Western District R/C Off-Road Car Club, Auckland; Chris, 09-838-5201

NORWAY

Aurskog R/C Club, Aurskog; Tommy Gjeleseth, 47-63-86-21-61

Dalen Raceway, Molde; Johnny Reitan, 94 64 52 95

Hadeland Raceway, Gran; Dag Bakke-Nilsen, 61330405

Lornskog RC Bane Track, Sorlihavna; Terje Rosemo, 47-952-44269

Store-Baller Raceway, 3/17/99 61330225; Ola Raastad

PHILIPPINES

Boyer R/C Hobby Shop, Rizal; Jose Chua, 721-2555

Philippine F1/Touring Club, Quezon City, Manila 1156; Raymond Aguilar/Ron Villafior, 896-64-15/23-30-08

Philippine R/C Association, Manila, Manila; Ronald/Manny Villafior, 23-30-08

QCRCCC Track, Quezon City, Manila 1008; Emer Agero, 063-3386189; email: emerlitoa@quickweb.com.ph; web: www.qcrccc.cjb.net

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SOUTH AFRICA

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Banana County R/C Racing Club, Margate 4275; Dennis Steenmans, 27-0-391-20975

Frantic Raceway, Welkon; Wayne Roodt, 27-57-35-72849

Gordons Bay R/C Club (GBRC), Gordons Bay, Cape Province; Andre Hollander, 024-512865

Grand Prix Electric Car Club, Boksburg, Gauteng; Gary Gibson, 27-11-826-1720

Helderberg Radio Control Car Club, Somerset West, Cape Province; Andre Hollander, 024-51-2865

Lowveld Radio Control Thunderdome, Nelspruit, Eastern Transvaal; Martin Van Der Merwe, 01311-534-6415

MERC Racing, Rustenburg, RSA
0300; Gerrie Pretorius, 014-5974569
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Norkem Raceway Club, Gauteng; Dan de Agrella, 2711-972-7011; email: craig@mweb.co.za
☐☐☐

Parow Radio Car Club, Parow, Cape Province; Stirling Spengler, 021-945-4957
☐☐

Parow Radio Control Car Club, Parow, Cape Province 7530; Craig, +27 21 919-5859; email: craig@kingsley.co.za; web: www.speedmodels.za.org
☐☐☐☐☐

Phoenix Raceway, Stilfontein, Transvaal; Lionel Edwards, 018-4842863
☐☐

Pick 'n' Pay Model Car Club, Klerksdorp 2570; H. Grobbs, (27) 18 46245421
☐☐☐☐☐

Pietersburg Model Racing, Pietersburg, Northern Transvaal; Peter Van Vuuren, 0152-293-0700
☐☐

Pretoria Model Racers, Pretoria, Gauteng; Deon Cerf, 27-083-630-2045; web: www.pretoriarmr.co.za
☐☐☐☐☐

Pretoria Off Road R/C Club, Pretoria, Gauteng; Gert Swart, 012-377-3238
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THAILAND

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BASKENT OTOPARK RACEWAY, ISTANBUL, ACT 81190; KAAAN CIFTCI, +90 (216) 3486332 +90 (532) 3558626; email: taneri@superonline.com
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VENEZUELA

R/C Mariche, Caracas DF 1070-A; Bruno Morganti, 58-02-241-3969 or 241-4993
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Santa Paula R/C Club, Caracas; Abecasis or Franco Agrusa, 02-2423954 or 02-4510314
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| ☐ AC power |
| ☐ Automatic lap-counting |
| ☐ Food available |

KEY TO SYMBOLS

- | | |
|-----------|--------------------|
| Indoor | Concrete |
| Outdoor | Asphalt |
| Off-road | Minis & Micros |
| On-road | On-site hobby shop |
| Oval | AC power |
| Dirt oval | Auto lap counting |
| Carpet | Food available |

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Now **THESE** are muscle cars!

We entered the fantasy realm for this month's "Street Muscle" feature, but if it's realism you're after, Associated's Mike Ogle is The Man. After spotting some of Mike's muscle-bound beauties on the RC Car Action Web bulletin board (radiocontrolzone.com), we called him to get a few shots to share with you. We also asked Mike for the particulars on each car because we knew you'd be looking for the bodies and wheels Mike used! Mike tells all ...



This 1967 Camaro is a Bolink 200mm body on a TC3 chassis. The color scheme is a very basic black and Pearl White with Alclad Chrome accents. The TC3 chassis is set up with a 27-turn MVP stock motor, LRP speed control and 7 cells. The American-mag-style wheels are from Hobby-Tech, and their spokes and centers were painted a gunmetal gray to contrast with the chrome rims. Hobby-Tech is no longer around, but the local Hobby People store had a big stash of wheels.



Here's an Associated Dual Sport chassis wearing an old McAllister Racing 1970 Mach 1 body. The Candy Blue paint is accented with white striping; the design is a kind of "conglomeration" of Mustang schemes from various model years. This car has 10 cells and a Novak speed control, and it has been raced in IEDA Bracket Racing competition.

This SuperBird is also a Bolink body originally designed for oval racing. I did this one in a 1970's-style "Sox and Martin" red, white and blue paint scheme and added a pro-stock-style "snorkel" hood scoop to help complete the drag theme. The chassis is also a Dual Sport, and power comes from a 15-turn Saiko motor and 6 cells. Wheels are standard Dual Sport items: chrome rims with gold BBS-style centers.



Originally designed as a "lowrider," the early '60s Impala is an obscure body from Pegasus Hobbies (you can find them on the web at pegasushobbies.com). It's finished in Pactra Candy Red with a touch of gold metal-flake and has a white top. The trim is Alclad Chrome with MonoKote tape. This body is on a TC3 chassis that sports Hobby-Tech chrome 5-spoke mag wheels and a Reedy 7-turn Ti motor that runs on up to 7 cells. It has been clocked at 74mph at the Rialto, CA, drag strip.

Next, I'll do an early Corvette. I'd like to encourage people to send *Car Action* photos of their unusual "muscle-car"-body creations. This is really fun for me!

—Mike Ogle

You got it Mike! This month's NOT secret contest is simple: just send us a photo of your RC muscle car, and Mike will pick his favorite. And the prize? Mike will style out a body for you and park it on a ready-to-roll Associated TC3! Check out the fine print below for more details.

The fine print: photos should be prints or slides—no Polaroids. To submit photos via email, send jpeg images of 200dpi or higher to backlot@airage.com. All entries must be received by August 30, 2002. Don't forget to include your name, address and phone number with each entry!

TATTOO CONTEST WINNERS



BEST TAT—JASON JAECKEL OF DALLAS, TX is an "avid reader of *RC Car Action*, inked to the bone with over 100 hours of needle work" and clearly had the best skin art of all the entries. Jason says he's into tattoo parlors (coulda guessed that one), doing mods on his quad E-Maxx, playing guitar for his metal band, and taking care of his wife and little boy. Jason also wanted to be sure Jaime Barajas got credit for the photo. Holding up the mag is a nice touch!

BEST DESIGN—
"WINNER TAKE ALL," DAVID OBREGON, HOUSTON, TX.
It's only fitting that David wins, since he is a tattoo artist! Great art, David.

Jason and David will each receive RC Car Action and RC Nitro T-Shirts and decals.

